

Lower North Post Area Development Plan

January 2008

Final



Lower North Post

Area Development Plan

January 2008



Contents

1 Introduction			
Purpose	2	Development Strategy	36
Process	2	Relationship to Long Range Development Plan	36
Vision	2	Building Siting	40
		Environmental Strategies	42
		Administrative Building Analogies	44
		Infrastructure Strategy	46
2 The Setting		Security Strategy	48
Location of ADP Study Limits	6	Circulation Patterns/ Transportation Management	52
LRC Land Use Designation	6		
3 Existing Site Character			
Overview	8	8 Implementation	
Development Constraints	10	Phasing and Funding	54
LNP Conclusions	16	Updating the Plan	54
Buildable Areas	16	Near Term Strategy	54
Facilities and Operations	22	Long Term Strategy	54
Circulation Patterns	24	LEED ND Certification	54
4 Program Requirements			
Overview	26	Appendices	
Existing Tenants and Functions	26	Strategy for Existing Buildings	A-1
Proposed Projects	26	MWR Framework Plan (2030)	A-2
		Central Plant Study	A-3
		LEED ND Checklist	A-8
		Sources	A-10
		Davison Army Airfield	A-12
		List of Figures	A-15
		List of Tables	A-15
5 Planning Principles			
Overview	28		
LEED for Neighborhood Development	29		
General Planning Principles	30		
6 Planning Framework			
Overview	32		
Required NEPA Documentation	32		
Framework Plan Alternatives	32		
Evaluation Criteria	34		
Preferred Framework	34		

1 Introduction

Purpose

Area Development Plans (ADPs), by definition, address the site planning of a specific area of an installation – unified by function, identity, location or architectural style. This ADP is an important part of the comprehensive master planning process. It serves as a vital link between site planning of individual construction projects and the broad planning direction contained within the Real Property Master Plan (RPMP). Each ADP presents a detailed framework for decision making on Long Range Component (LRC) proposals, based on established design standards in the Installation Design Guide (IDG).

The focus of this ADP is the redevelopment of the Lower North Post into a future mixed use administrative area at Fort Belvoir as defined in Figure 1–1. The ADP will illustrate short-term and long-term physical changes, with the latter depicted in phases. In all cases, the ADP will present much of the data through graphics.

The final ADP will provide planning direction for: building footprints; areas reserved for future development; building setbacks; parking; streets and roads; recreation areas, complementary uses; housing; and retail.

In addition to analysis, drawings, and plans, the ADP will also include details or sketches that illustrate important features of the plan - such as architectural character, recommended solutions to circulation problems, etc. It will also indicate construction phasing and development priorities, which will correlate with the facility programming contained in the Short Range Component (SRC), Military Construction (MILCON), and other project funding documentation.

Process

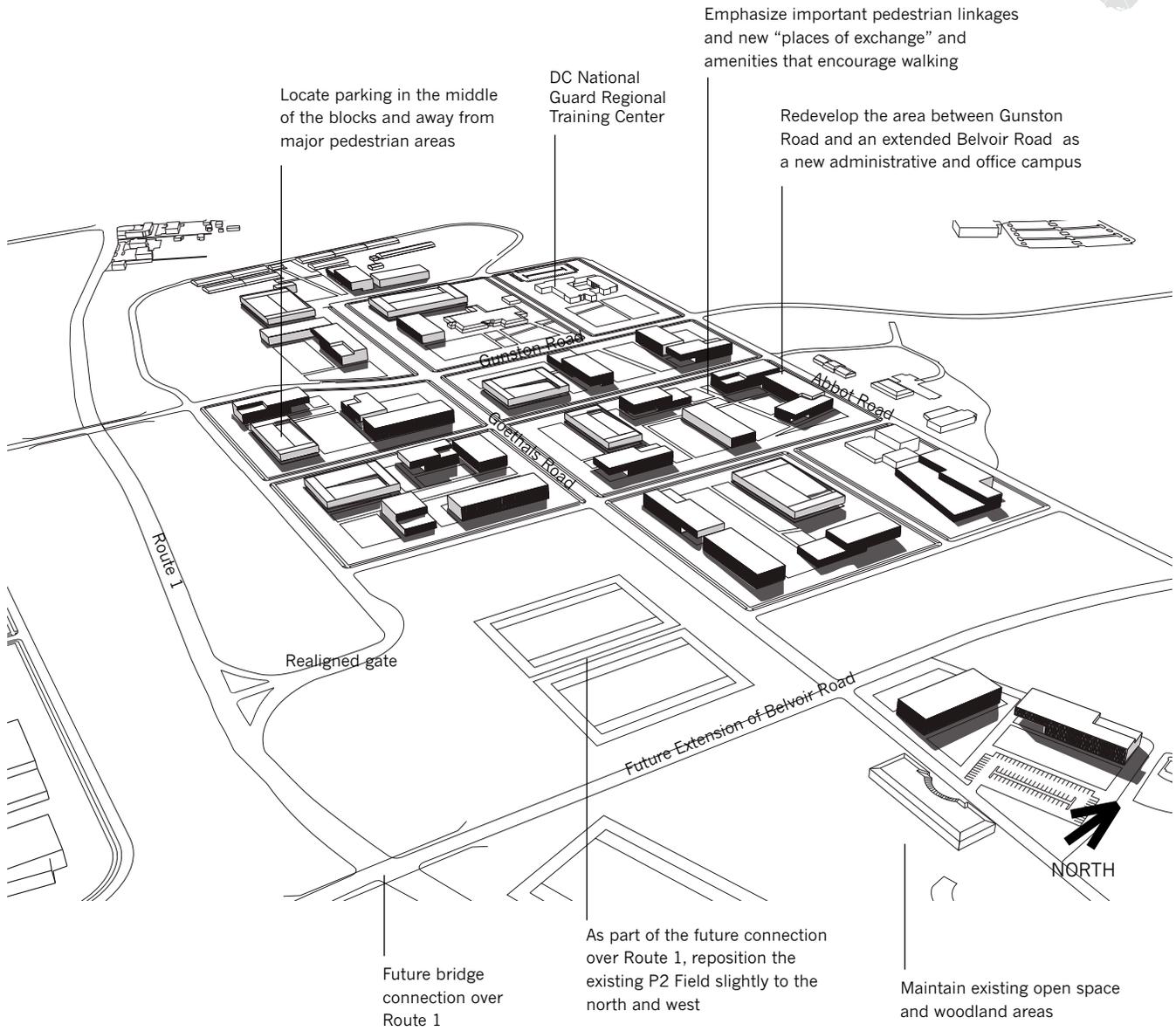
Developing an ADP is an inherently flexible process. While each ADP has its own unique focus, there are eight key steps that are general to creating an ADP that will also be coordinated with the LEED Neighborhood Development pilot program to encourage and raise awareness of best practices in sustainable design.

- STEP 1: Set goals.
- STEP 2: Define area boundary.
- STEP 3: Define program requirements.
- STEP 4: Collect and analyze data.
- STEP 5: Develop alternative plans.
- STEP 6: Evaluate alternative plans.
- STEP 7: Develop final plan.
- STEP 8: Develop implementation plan.

Vision

The vision for the future redevelopment of the Lower North Post is for it to change from an area of recreational facilities, barracks and soldier support facilities and open area to an office/administrative environment. This redevelopment will happen in phases as the need for new office development arises and when the barracks are rebuilt in another location on the installation. The idea is that this will serve as an administrative area for agencies that will most likely move to Ft. Belvoir in the future in order to meet security requirements. Creating administrative facilities in this area will mean that there will be office space and parking structures to support those workers; there will also be some housing and retail, also in support of the office workers. In the near-term there will be some demolition/relocation of buildings, and when the full redevelopment of the area is achieved there will be more relocation/demolition and new construction of a variety of uses to include, retail, housing, office and structured parking.

Figure 1-1 The Setting: Lower North Post



The vision for the Lower North Post area is to:

- Redevelop the area between Gunston Road and an extended Belvoir Road as a new office campus
- Emphasize important pedestrian linkages and new “places of exchange” and amenities within the new office campus that encourage walking
- Maintain existing open space and woodland areas
- Extend Lewis Village with additional housing west of Woodlawn Road to an extended Belvoir Road
- As part of the new connection over Route 1, reposition the existing P2 Field slightly to the north and west

Figure 1-3 Reshaping Fort Belvoir: Long Term Proposal for the Lower North Post



- | | | | | | |
|---|-------------------------|---|--------------------------------|---|---------------------------|
|  | Existing Buildings |  | Area Development Plan Boundary |  | Engineered Open Space |
|  | Proposed Buildings |  | Proposed Block Framework |  | Previously Developed Land |
|  | Future Expansion |  | Streams |  | Recreational Fields |
|  | Proposed Parking Garage |  | Forest |  | Grasslands |

ASSUMES PARKING GARAGES WILL BE BUILT TO ACCOMODATE MORE RETAIL AT HIGHER DENSITY

2 The Setting

Location of ADP Study Limits

The area of the Lower North Post is now just the Troop housing area, surrounded by both large recreation areas and some large areas of wildlife that are natural and underdeveloped. There are also many open, unused or underutilized lots along with some roads that are off the grid and not used. The Washington, DC National Guard is constructing a training center in this area that will be completed in 2008.

The boundaries of the Lower North Post are Abbot Road on the north, Woodlawn Road on the east, Route 1 Richmond Highway on the South, and Foster Road on the West.

Character of ADP Study Limits

The study area of the Lower North Post is mostly made up of areas that have been previously developed. The Troop Housing area is presently located here and it will be moved in the future. The remainder of the area is occupied by soldier support facilities; including dining facilities, fitness facilities, a movie theater and a motor pool among other uses. There are some areas that have remained green and/or wooded, but there are few and those that have never been cleared and are in Resource Protections Areas (RPAs) and will remain in that state.

LRC Land Use Designation

The area is presently broken into four uses; Troop housing, professional/institutional, community, and residential to the far east of the area. By 2015 the majority of the area will be designated as professional/institutional with that area in the far east still designated as residential; and it is anticipated that there will be added units of residential in that area. In the long-term the only difference is the last phase of the development to the east between the office and residential uses will be higher density residential above retail that will be built to support both the residents and the office uses.

Land Use Legend

-  Constrained Areas Overlay
-  Main Post Installation Boundary
-  Airfields (AIR)
-  Community (CMY)
-  Industrial (IND)
-  Professional_Institutional (PRO)
-  Residential (RES)
-  Ranges and Training (TNG)
-  Troop (TRP)

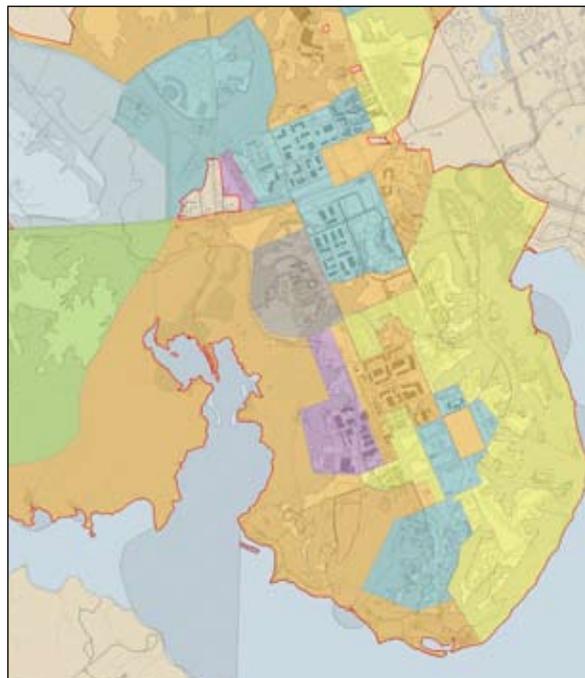
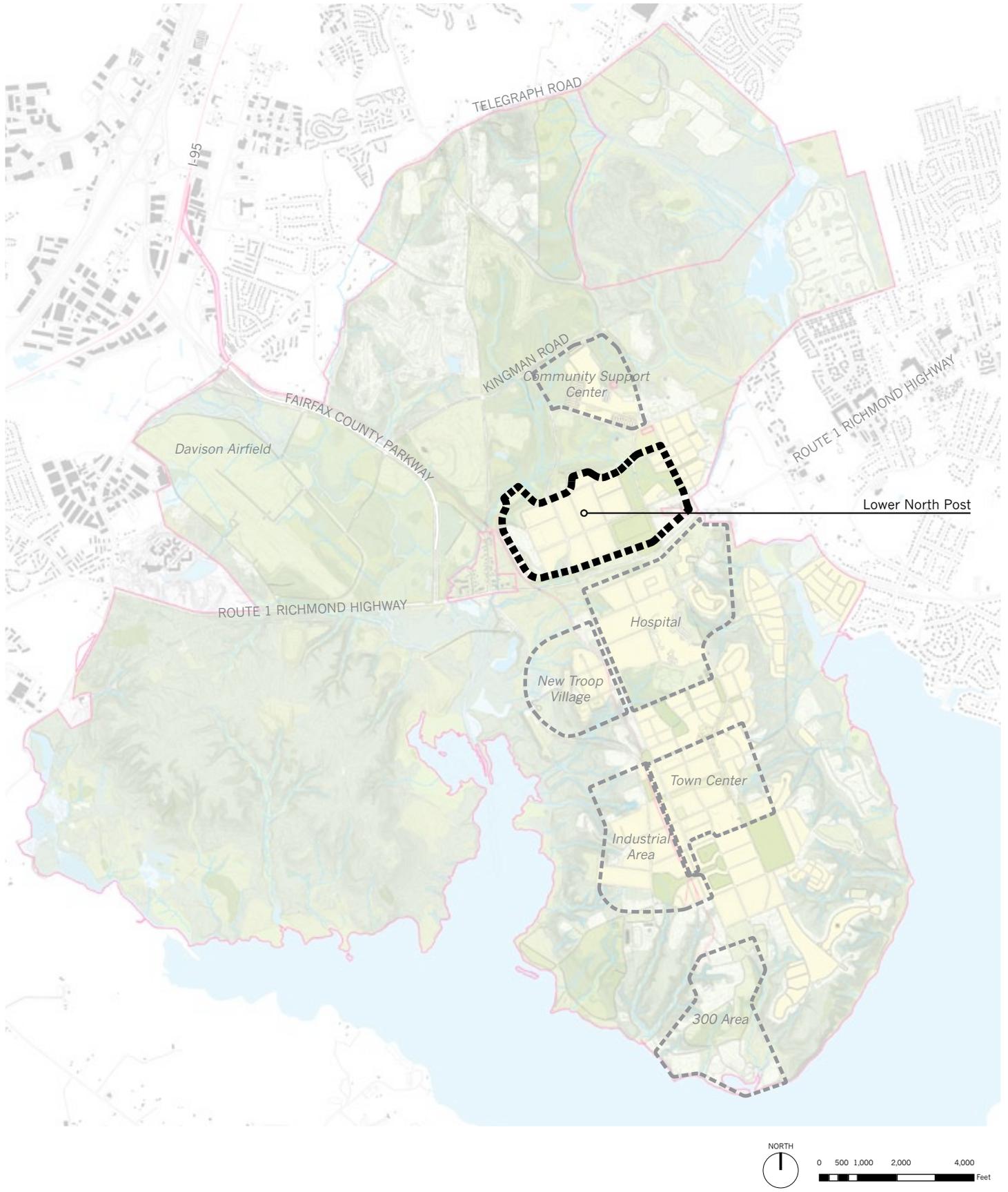


Figure 2-1 Land Use Map 2030

Figure 2-2 The Setting: Lower North Post Today (2007)



3 Existing Site Character

Overview

This section describes the existing character of the site by analyzing its existing natural constraints, buildable areas, structures, and circulation patterns.

Fort Belvoir is a significant part of the local and regional ecosystem. All decisions affecting Fort Belvoir’s wealth of natural resources have a critical impact on the surrounding environment. It is important for the Lower North Post Area Development Plan to uphold the land-use planning goals as established by the post.

The way in which Fort Belvoir manages its ecosystem requires all proposed development to understand the delicate interrelationships that exist within and outside the installation boundaries.

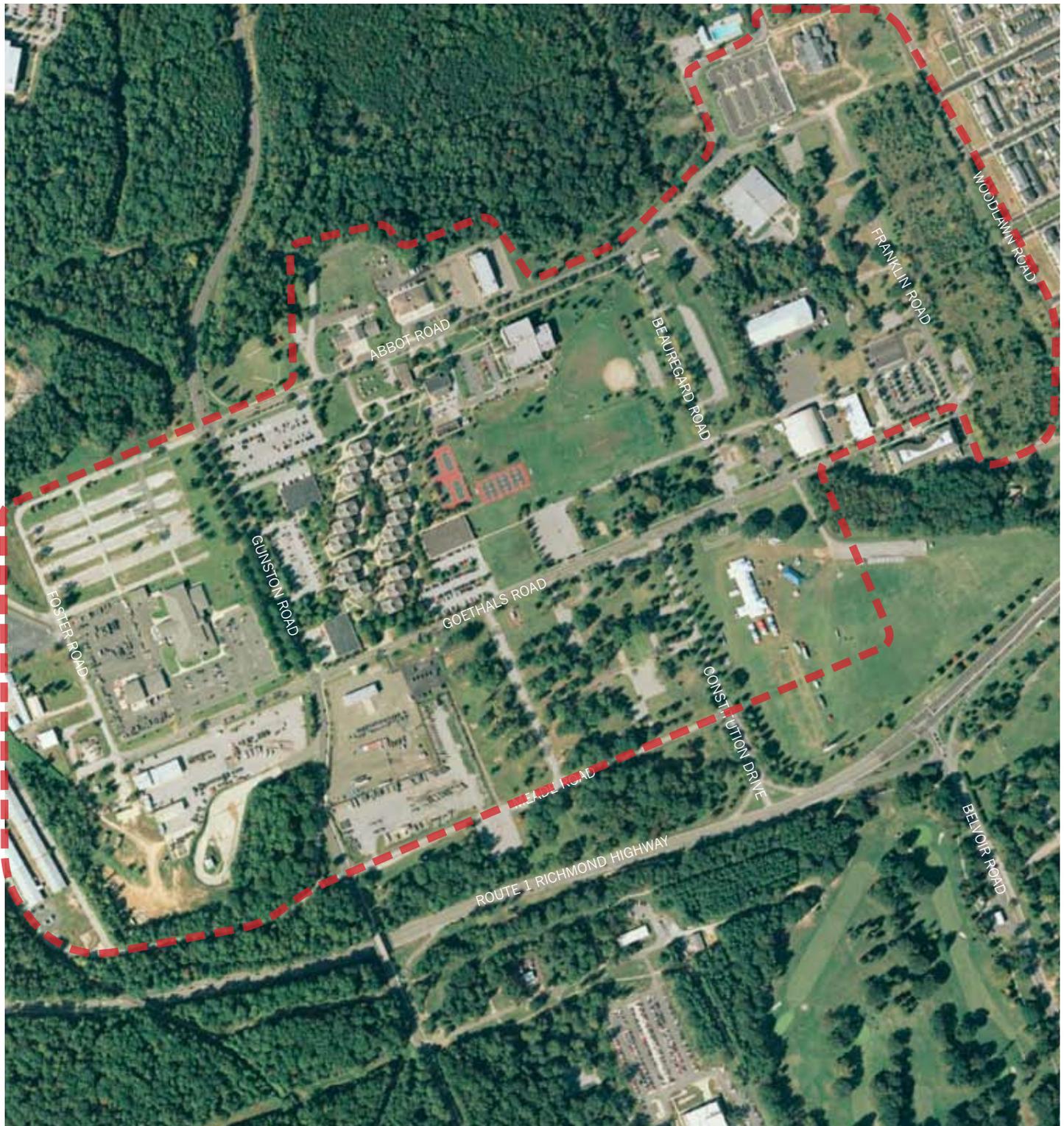


Existing Parade Ground



Existing McRee Barracks Complex

Figure 3-1 Aerial Today (2007)



Source- Fort Belvoir DPW GIS Department



3 Existing Site Character

Development Constraints

From an environmental perspective, much of the plateau areas on the Lower North Post Development Plan (LNP) ADP parcel are developable as these areas have been disturbed by previous development. The location of the LNP is illustrated in Figure 1-1. However, there are natural, cultural, historical, and operational environmental constraints within the LNP parcel. The methodology used to evaluate the environmental constraints on the LNP parcel was to populate a constraints matrix using a GIS-based tool that calculates the acreage or number of each environmental constraint within the footprint of the LNP parcel.

Using this methodology identified the following environmental characteristics and variables that could be affected by development within the LNP parcel:

- Resource Protection Areas
- Wetlands
- Riparian Buffers
- Conservation Areas
- Steep Slopes
- Airfield Building Height Restrictions
- Solid Waste Management Units
- Hazardous Waste Management Units
- Petroleum Storage Areas
- Petroleum Release Sites
- Cemetery
- Air Quality Permits
- Construction Permits

The constraint and the extent of these impacts are summarized in Table 3-1.

Table 3–1 Development Constraints Located in the Study Area

Resource	Size or Number	Units	Comment/Description
<i>Natural Resource Constraints</i>			
Resource Protection Areas	15.1	Acres	Avoid where possible. Coordinate with Fort Belvoir ENRD to be in compliance with Chesapeake Bay Program.
Wetlands	0.9	Acres	Avoid where possible. Permit may be required if impacting wetlands. Costs for wetland banking, jurisdictional review by the USACE and VDEQ.
Riparian Buffers	8.4	Acres	Implement Low Impact Development (LID) in these areas if avoiding completely is not possible.
Conservation Areas	5.7	Acres	Negligible impact on this resource is expected, however, ideally, no net impact would be expected if similar habitat elsewhere on Fort Belvoir were to be designated for preservation.
Steep Slopes	1.1	Acres	Engineering practices may allow for construction on steep slopes should unconstrained land nearby not be available.
<i>Operational Resource Constraints</i>			
Airfield Building Height Restrictions	approx. 96-220	Feet	See Appendix for Airfield discussion. Further site studies should be done once the site is selected.
Solid Waste Management Units (SWMUs)	11	Each	Many SWMUs will require environmental investigations to determine the nature and extent of the impacts. Investigation work plans will require EPA and VDEQ approval. Site investigations can be performed concurrently with site preparation activities.
Hazardous Waste Management Units (HWMUs)	2	Each	Investigation work plans will require EPA and VDEQ approval. Site investigations can be performed concurrently with site preparation activities. Additional investigation can be performed to determine if and where residual impacted soils exist.
Petroleum Storage Areas (PSAs)	148	Each	There are 12 active and 136 inactive PSAs in the LNPDP parcel. These could be aggressively addressed as part of the site preparations. A closure process involving administrative and decontamination process will be required. Confirmation samples collected beneath USTs and potentially some ASTs will likely be required to demonstrate no release has occurred. It can be expected that some USTs will have a release previously undiscovered. Mitigation measures could be integrated into the construction phase of the project in concert with the site preparation and earthwork features for minimal impact to the overall construction schedule.
Petroleum Release Sites (PRSs)	55	Each	Petroleum releases were discovered at these locations, pollutant complaint numbers (PC #s) were assigned by the VDEQ, and various corrective actions/remediation occurred at the sites. Any disturbance to the subsurface soil at these sites may require environmental remediation actions. Intrusive activities at the sites would require a Health and Safety Plan be prepared specifying construction workers protection and monitoring requirements at the site(s). PRSs located within a proposed building envelope could be aggressively addressed as part of the site preparations. Mitigation measures could be integrated into the construction phase of the project in concert with the site preparation and earthwork features for minimal impact to the overall construction schedule. Excavation and sampling of petroleum impacted soils areas will likely be the most effective manner to address these PRSs within an aggressive time frame.
<i>Cultural and Historic Resource Constraints</i>			
Cemeteries	0.9	Acres	The cemetery must be avoided.
<i>Other Environmental Regulatory Considerations</i>			
Air Quality	N/A	Not Applicable	Air quality permitting requirements will require all development be involved in calculating pollution loads and determining most prudent air permitting course of action. Exceeds the threshold value of 100 tons of NOx per year would trigger additional permitting requirements for large Fort Belvoir development projects.
Construction Permits	TBD	Not Applicable	Sediment and Erosion Plan and Registration Statement are required for development projects.

3 Existing Site Character

Natural Constraints

Fort Belvoir's natural environment is a complex area where several ecological sub-regions converge, resulting in a diversity of environmental conditions, habitats, and climate.

Resource Protection Areas. The LNP includes 15.1 acres of Resource Protection Areas (RPAs), which are shown in Figure 3-3. The RPAs are located in the southwest corner in between Gunston Rd. and Meade Rd. The other RPA site is situated in the upper northeast corner along Abbot Rd. and Franklin Rd. Habitable development in these areas should be avoided. Any proposed road and bridge corridor crossings that would go through the RPAs are permitted but should be minimized.

The RPAs are used for planning purposes only and have not been field verified for perenniality. Because the affected RPAs are near the headwaters of streams, a perenniality determination would be conducted to determine which of these RPAs are associated with perennial streams. Those not associated with perennial streams may be available for development.

Wetlands. The LNP includes 0.9 acres of wetlands (Figure 3-3). The wetland areas are situated within the RPAs that straddle small intermittent streams, which are located in the southwest corner in between Gunston Rd. and Meade Rd. and as well as in the upper northeast corner along Abbot Rd. and Franklin Rd.

The wetlands on Figure 3-3 are used for planning purposes only and have not been jurisdictionally delineated. Construction in jurisdictional wetlands is possible but requires obtaining a Section 404 permit from the Corps, and mitigation such as wetland creation or banking.

Riparian Buffer Areas. The LNP includes 8.4 acres of riparian areas (Figure 3-3), which generally overlap the RPAs along intermittent and perennial streams, which are located in the southwest corner in between Gunston Rd. and Meade Rd. as well as, in the upper northeast corner along Abbot Rd. and Franklin Rd. Most of the water features are perennial drainages that flow in a western direction.

Because of the importance of riparian areas as buffers for runoff filtration for water quality and habitat, these areas should be avoided. If development in riparian areas is unavoidable, LID practices should be incorporated into design.

Conservation Area. The LNP includes 5.7 acres of conservation areas in the southwestern portion of the proposed development area (Figure 3-4). The conservation area is located within the LNP borders of Gunston Rd. and Meade Rd. This area is designated as Accotink/Pohick Wetland Conservation Area. A negligible impact on this resource would be expected, however, ideally, no net impact would be expected if similar habitat elsewhere on Fort Belvoir were to be designated for preservation.

Steep Slopes. The LNP includes 1.1 acres of steep slopes, which are mostly located along Fraizer Loop, which makes up a section of the northern boundary of the LNP. A small steep slope area is also located at the extreme southwest corner of the proposed development area (Figure 3-3). Steep slopes should be avoided, however engineering practices that allow for construction on steep slopes may be permitted should unconstrained land nearby not be available.

Operational Constraints

Airfield Building Height Restrictions.

About two thirds of the development area for the LNP (185.1 acres) are within the building height restriction zones for Davison Army Airfield (DAAF). The restrictions are relative to the airfield runway elevation of 73 feet above mean sea level (Figure 3–5). 70.9 acres restrict building heights to no greater than 150 ft and also 114.2 acres restrict building heights to up to 500 ft above DAAF ground surface level. Designs for the LNP should reflect the site-specific building height restrictions.

Solid Waste Management Units (SWMUs).

The development areas for the LNPDP parcel include 11 SWMUs which are scattered throughout the development area (Figure 3–5). Table 3–2 summarizes the SWMUs. Mitigation for these SWMUs range from administrative closure to site investigation including soil and groundwater sample collection and analysis. The cost estimates for the investigation of these SWMUs is about \$300,000, and if fully funded would take about 6 months to complete. However, for those sites requiring confirmation sampling or site investigation, subsequent cleanup requirements can only be determined following analysis of the samples to determine if additional corrective action is required.

Hazardous Waste Management Units (HWMUs).

Two HWMUs are located within the development areas of the LNP parcel. The location of these HWMUs are illustrated in Figure 3–5 and summarized in Table 3–3 Hazardous Waste Management Units. VDEQ

has issued letters of concurrence with the no further action determination for all HWMU sites at Fort Belvoir. However, disturbance of these sites could result in a complete exposure pathway to human health and the environment. In these cases, it is likely VDEQ will require reopening the site to properly protect human health and the environment.

Table 3–2 SWMUs in the LNP

SWMUs	
SWMU_ID	Site Description
N-02	Two 250-gal aboveground storage tanks that contain petroleum, oil, and lubricants
C-07	Two vehicle wash racks, one located inside building 1984 and the other outside
D-08	Former site of 2-stage oil/water separator & lift station located 5ft east of Building 1985
F-06	Former site of 250 gal steel tank for waste oil, solvents, & sludge and set on bare soil.
C-12	No longer existing diked concrete pad used for cleaning vehicles and equipment
F-07	Former site of aboveground storage tank & 3 waste oil 55-gallon drums
E-14	Stained pavement (minor); currently being used by motor pool for storage of heavy trailers.
J-06	Former site of propane document incinerator on the NW corner of building 1927
L-20	Former site of the former location of a photo lab in Building 1809

Table 3–3 Hazardous Waste Management Units on LNP

HWMU	
HAZSITE_ID	Narrative
01949-hpcs	Aboveground Storage Tank Between Buildings 1949 and 1950
01949-hpcs	Oil/Water Separator Between Buildings 1949 and 1950

Petroleum Storage Areas (PSAs). 148 PSAs, 12 active and 136 inactive, have been

3 Existing Site Character

Table 3–4 Petroleum Storage Areas (ACTIVE) in the LNP

Petroleum Storage Areas (ACTIVE)					
TANK_ID	TANK_ID	TANK_ID	TANK_ID	TANK_ID	TANK_ID
01809B	01822B	01832B	01906C	01950B	02119A
01810A	01822D	01906B	01950A	02117C	01906E

Table 3–5 Petroleum Storage Areas (INACTIVE) in the LNP

Petroleum Storage Areas (INACTIVE)							
TANK_ID	TANK_ID	TANK_ID	TANK_ID	TANK_ID	TANK_ID	TANK_ID	TANK_ID
01804B	01906A	01919A	02212A	01834A	02244A	02266A	01819A
01809A	01923A	01920A	02213A	01903A	02245A	02267A	01822A
01824B	01906D	01923B	02214A	02221A	02246A	02268A	01824A
01901B	01902C	01924A	02215A	02223A	02247A	02272A	01832A
01902D	01804A	01925A	02216A	02224A	02248A	02273A	01915A
01902E	02113A	01926A	02217A	02225A	02251A	02274A	01921B
01918A	02120A	01927A	02220A	02226A	02252A	02275A	01921A
01918B	02201A	01928A	01836A	02227A	02253A	01802A	01922A
01930B	02202A	01929A	01938A	02228A	02257A	01803B	01922B
01931A	02204A	01934A	01939A	02233A	01803A	01803D	02222A
01930A	02205A	01948A	02117A	02234A	01943A	01803E	01800A
02203A	01901A	01948B	02117B	02235A	02258A	01803F	01822C
01835A	01902A	01948C	01949B	02236A	02259A	01805A	01822E
02232A	01907A	02208A	02411A	02237A	02260A	01813A	01803H
02250A	01908A	02209A	02417A	02238A	02261A	01816A	01803G
02271A	01911A	02210A	02422A	02239A	02264A	01817A	01803C
02421A	01916A	02211A	01819B	02241A	02265A	01818A	01902B

identified on the LNPDP parcel; Figure 3–4 illustrates the locations. Table 3–4 identifies all the active tanks and Table 3–5 identifies the inactive tanks on the LNPDP parcel. The majority of the PSAs are located in the northwest corner of the LNPDP, where a housing development was located in the 1970's. Each housing unit in the development at one time had its own oil storage tank, for the purpose of storing heating oil. Mitigating these PSA constraints is a straightforward decommissioning process. Many of the open PSAs are unregulated, so a costly formal closure process can be avoided. On average, 1 in 3 USTs at Fort Belvoir is an old single-walled steel UST, so it can be expected that some USTs will have a release previously undiscovered. This mitigation measure could be integrated into the construction phase of the project in concert with the site preparation and earthwork features for minimal impact to the overall construction schedule.

Petroleum Release Sites (PRs).

55 Petroleum Release Sites have been identified in the LNP parcel, which are listed in Table 3–6. These PRs are scattered over the entire general area of the lower North Post, Figure 3–5 illustrates the locations. Petroleum releases were discovered at these locations, pollutant complaint numbers (PC #s) were assigned by the VDEQ, and various corrective actions/remediation occurred at the sites. Any disturbance to the subsurface soil at these sites may require environmental remediation actions. Intrusive activities at the sites would require a Health and Safety Plan be prepared specifying construction workers protection and monitoring requirements at the site(s).

PRs located within a proposed building envelope could be aggressively addressed as part of the site preparations. Mitigation measures if required could be integrated into the construction phase of the project in concert with the site preparation and earthwork features for minimal impact to the

Table 3–6 Petroleum Storage Areas (ACTIVE) in the LNP

Petroleum Storage Areas (ACTIVE)						
SITE_ID	SITE_ID	SITE_ID	SITE_ID	SITE_ID	SITE_ID	SITE_ID
ca_01802_1	ca_01902_1	ca_02421_1	ca_02113_1	ca_02212_1	ca_01822_1	ca_02211_1
ca_01813_1	ca_01907_1	ca_02422_1	ca_01949_1	ca_01948_1	ca_01822_2	ca_02222_1
ca_01816_1	ca_01908_1	ca_01824_1	ca_01902_2	ca_01818_1	ca_02120_1	ca_02223_1
ca_01817_1	ca_01916_1	ca_01804_1	ca_02415_1	ca_02201_1	ca_01803_2	ca_02225_1
ca_01819_1	ca_01923_1	ca_01805_1	ca_01803_1	ca_02241_1	ca_01939_1	ca_02232_1
ca_01832_1	ca_01926_1	ca_02209-	ca_01911_1	ca_01856_1	ca_02201_2	ca_02233_1
ca_01901_1	ca_01928_1	2217_1	ca_02411_1	ca_01810_1	ca_02202_1	ca_02234_1
ca_02235_1	ca_02238_1	ca_02417_1	ca_02268_1	ca_02271_1	ca_02403_1	
		ca_02244_1				

overall construction schedule. Excavation and sampling of petroleum impacted soils areas will likely be the most effective manner to address any residual contamination associated with these PRSs within an aggressive time frame. This constraint can be mitigated by employing a Health and Safety Program including qualified industrial hygienists and a HSP. Most large construction firms are experienced in this area. The cost estimates for a Health and Safety Program to adequately address this issue are not considered significant as the specifications of the construction project itself will likely require a HSP. This requirement can be incorporated into the construction program without adding significant costs.

Cemeteries. The development areas for the LNP include roughly 0.9 acres for one cemetery. This cemetery is maintained by an off-post organization. Development in this area must be avoided.

Other Environmental Constraints

Air Quality. If the pollution loads of a single proposed development in the LNP exceed the threshold standard of 100 tons of NOx per year, a Nonattainment New Source Review (NNSR) would be required. The reviews typically take 18-24 months to complete. If mitigation and engineering controls such as selective catalytic reduction (SCR) can be used the pollution load can be lowered. The issue is installation-wide so Fort Belvoir should work with future tenants to address this issue.

Fort Belvoir is currently near the threshold of their current Title V permit. Disaggregating emissions sources and permitting processes is a novel approach that requires support from VDEQ. However, disaggregation should be examined further for this program as a feasible form of mitigation.

Construction Permits.

Construction activities that disturb wetlands and stream crossings would require a wetland permit. A Fort Belvoir agent or contractor will need to prepare and submit a Sediment and Erosion Control Plan (SECP) to Fort Belvoir DPW-ENRD for approval as Fort Belvoir hold a MS4 Permit and self- regulates in this arena. The SECP needs to be registered with the Virginia Department of Conservation and Recreation.

3 Existing Site Character

LNP Conclusions

In light of the numerous environmental constraints at Fort Belvoir these areas are relatively small when compared to Fort Belvoir as a whole with many environmental constrained areas avoided completely. The resources identified in Figures 3-3 to 3-6 should be avoided where possible development of the LNP may occur. If they cannot be avoided, mitigation measures for each of the constraints identified in Table 3-1 and the text above would likely be required to be implemented.

Buildable Areas

Buildable areas within the study area are shown in Figure 3-2. Except for building height restrictions due to the airfield, buildable areas are not limited by the previously described development constraints. Because these areas are the most cost-effective and readily available, development plans will aim to completely utilize buildable areas before venturing on to constrained land. The Buildable Areas Overlay is generated by subtracting the constraints overlay area from the installation area. The constraints overlay utilizes all GIS constraint layers – natural, cultural and operational.

Figure 3-2 Buildable Areas Overlay Map



Source- Fort Belvoir DPW GIS Department

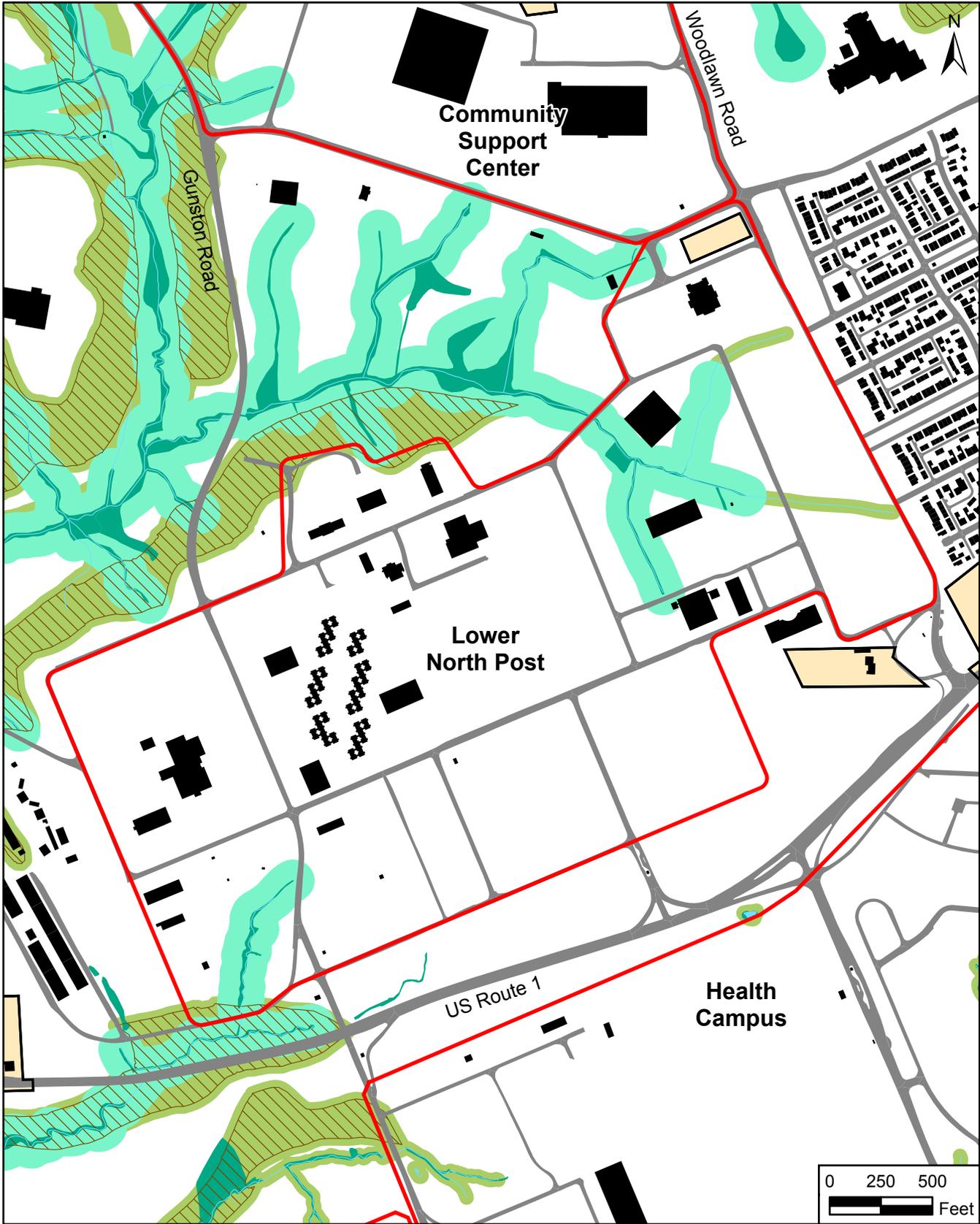
Legend

-  Developable Areas Overlay

NORTH



Figure 3-3 Water Resources

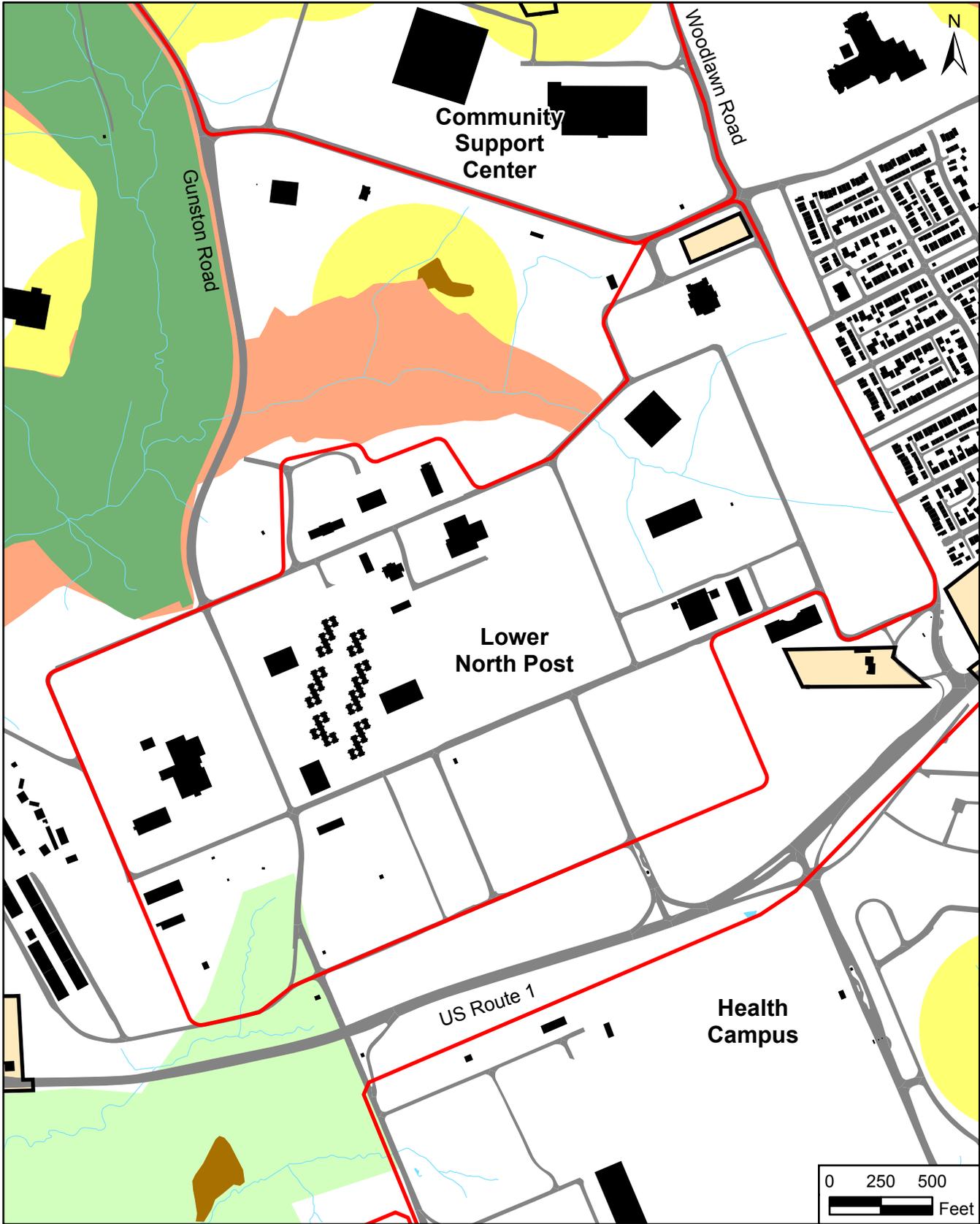


LEGEND

ADP Boundary	Wetland	Riparian Area
Steep Slopes	RPA	

**Lower North Post
Water Resources**

Figure 3-4 Sensitive Habitat

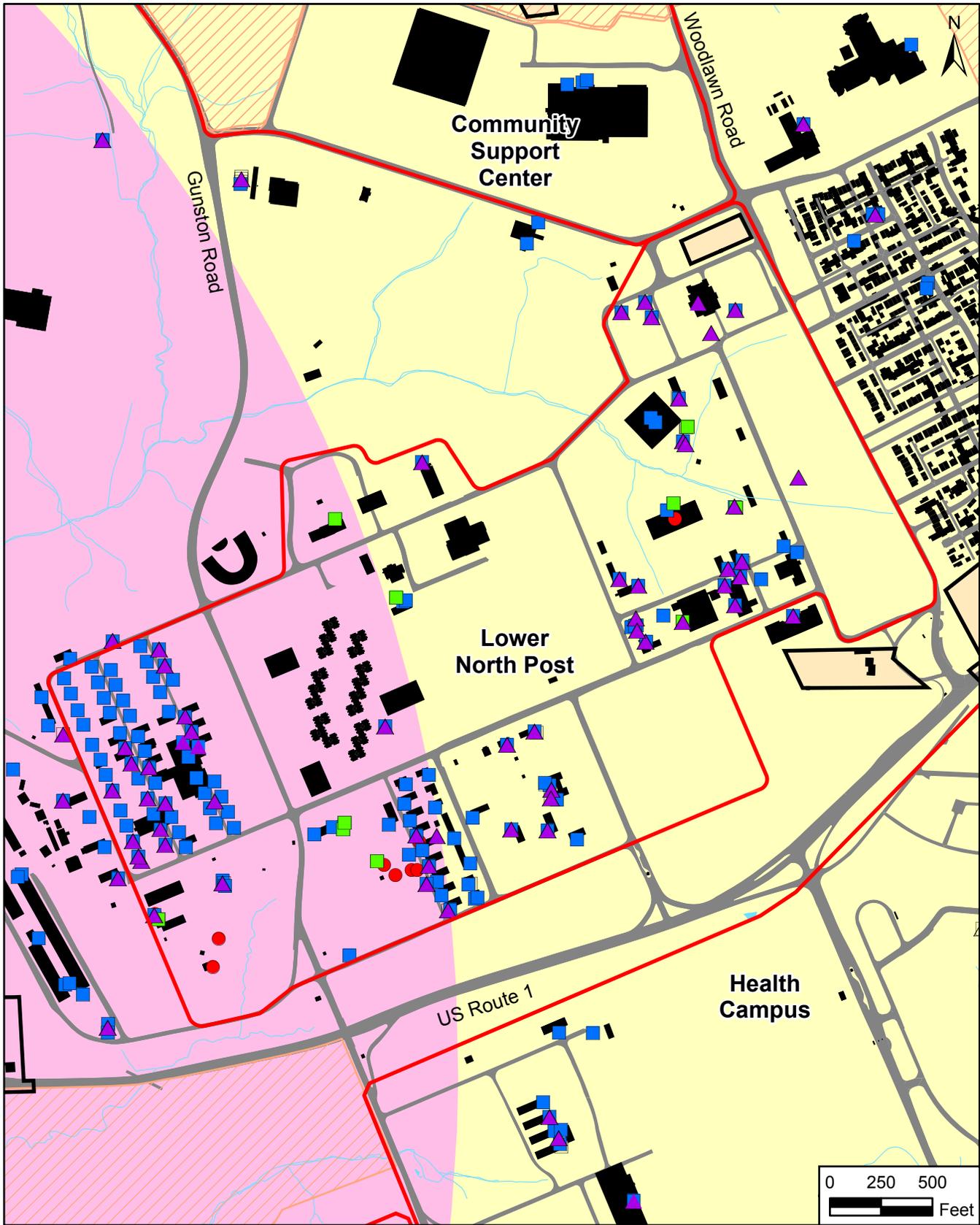


LEGEND

- | | | |
|-------------------|----------------------------|--------------------|
| ADP Boundary | Fauna Special Species Area | Conservation Area |
| PIF Priority Area | Flora Special Species Area | Migration Corridor |

Lower North Post Sensitive Habitat

Figure 3-5 Operational Constraints

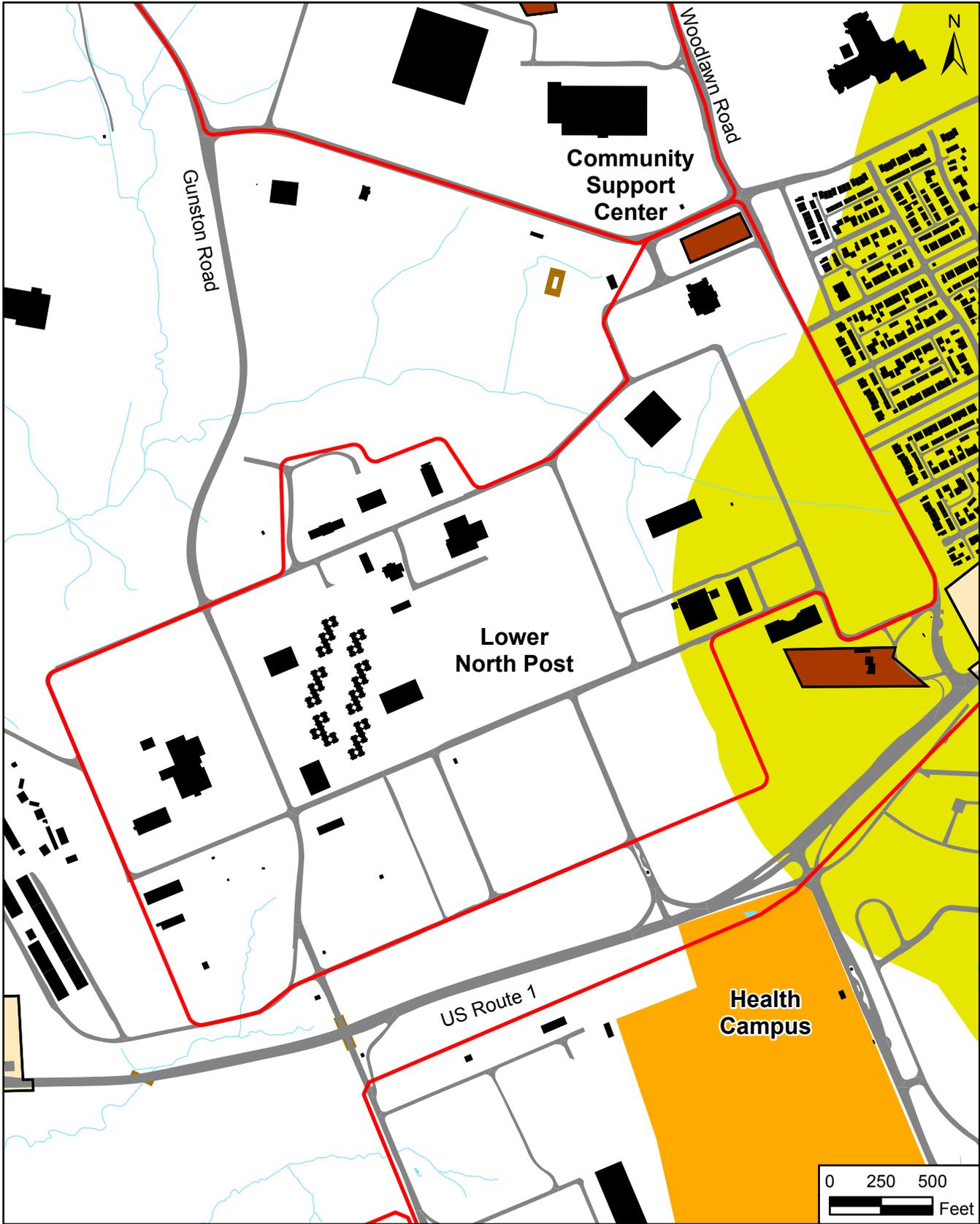


LEGEND

- | | | |
|-----------------------------------|-----------------------------|-----------------------------|
| ADP Boundary | Solid Waste Management Unit | Former Range |
| Petroleum Storage Area - Active | Petroleum Release Site | 500-ft Air Restriction Zone |
| Petroleum Storage Area - Inactive | 150-ft Air Restriction Zone | |

**Lower North Post
Operational Constraints**

Figure 3-6 Cultural Resources



LEGEND

- ADP Boundary
- Cemetery
- Historic Overlay Buffer
- Historic Building
- Historic District

**Lower North Post
Cultural Resources**

3 Existing Site Character

Facilities and Operations

Each item of real property is defined as a facility. The Army uses four facility types for analysis purposes:

Land (L) - Land (in acres) comprises whole, or part, of a military installation owned in fee by the Federal Government and/or under custody and accountability of the Army.

Building (B) - Buildings (in square feet) are constructed on a space of land that is completely enclosed by a roof, walls, and usually flooring. It normally serves the purpose of occupancy.

Utility (U) - A utility (in capacity) is a distribution system, commodity source, or commodity collection point that provides a service or commodity to more than one building or structure.

Structure (S) - A structure is any real property facility that is not classified as a building, utility system, or land by the previous definitions. Typical examples are airfield pavements, roads, firing ranges, and athletic fields.

assessments conducted by facility occupants. These Q-Ratings are used to derive an installation-wide Quality Rating at the Facility Class level. All military services report Q-ratings using the same DoD methodology. The four Q-Ratings are defined in Table 3-5 that follows.

Q-ratings for facilities can be found in the Installation Status Report (ISR). Appendix A-1 lists all existing buildings within the ADP study area. Q-rating colors are applied to the installation's GIS data to create a graphic overlay that clearly shows ratings in the study area. See Table 3-7.

Source:
1. Department of the Army, Pamphlet 415-28: Guide to Army Real Property Category Codes, 11 April 2006

Building Quantity

The study area contains about 40 buildings, totaling more than 180,000 GSF. Appendix A-1 lists each existing building, its tenants, and functional use from the Real Property Inventory (RPI). Uses are classified by the current use category code (CUCC).

Building Quality

Installation buildings are always under consideration for maintenance and repair. In order to determine the current quality of a building, it is assigned a Quality or Q-Rating. These ratings are based on a ratio of restoration cost estimates ("cost to fix") to facility plant replacement value (PRV). Restoration cost is based on facility condition

Figure 3-7 Installation Status Report

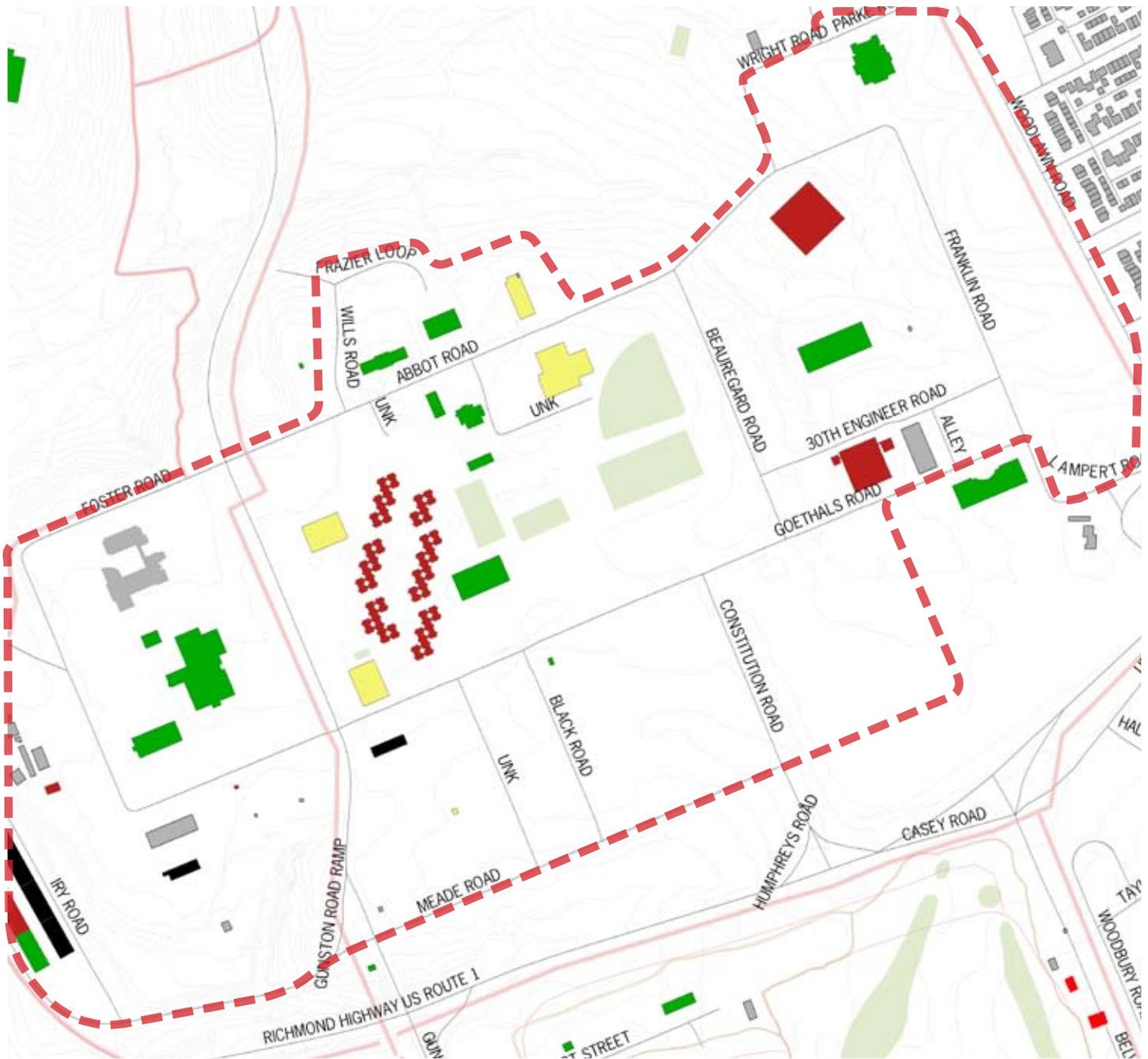


Table 3-7 ISR Rating Definitions

Rating	Definition
Q-1 (Green)	Minor facility condition deficiencies and no significant facility configuration deficiencies, with negligible impact on the capability to support the tenant organizations' required missions.
Q-2 (Yellow)	Some facility condition deficiencies and/or configuration deficiencies that have limited impact on the capability to support the tenant organizations' required missions.
Q-3 (Red)	Significant facility condition deficiencies and/or configuration deficiencies that impair the capability to support some of the tenant organizations required missions.
Q-4 (Black)	Major facility condition deficiencies and/or configuration deficiencies that present significant obstacles to the tenant organizations accomplishment of required missions.

Table Sources:
 1. Military Planning Technical Manual
 2. U.S. Army Installation Management Agency, Public Works Digest Vol. XVIII No.1, Jan/Feb 2006, downloaded from http://www.ima.army.mil/sites/pw/digest/pwd_janfeb06.pdf



3 Existing Site Character

Circulation Patterns

The biggest issue for the Lower North Post neighborhood as far as access and circulation is two-fold. The first is the fact that at the present time there is not any direct access control points (ACP) for the area from the off-post roadways. Lieber Gate, on Constitution Drive, was closed in 2002 and the Woodlawn Gate in 2006. Thus, all traffic must access the area via other gates. From the Fairfax County Parkway, vehicles enter via the Kingman Gate. From Route 1, vehicles access this area through gates on South Post and crosses over Route 1 via Gunston Road. This increases congestion at the South Post ACPs and on the portion of Gunston Road crossing over Route 1. However, a new ACP control point is proposed for the area and is slated to be completed by 2011.

The second issue is that many of the roads within and through the Lower North Post neighborhood are either in disrepair, or no longer connect to any other roads. The road network in this area would need to be improved in order for the planned developments to take place. The circulation map shows some of the roads and access points that need to be improved.

The present circulation pattern serves the uses that are there today. However, as the area becomes more dense there will need to be adjustments made to the circulation patterns in order to handle the new loads. The fact that this area also has several unused and/or underutilized roads that don't connect to the road network needs to be addressed.

The ADP study area is located between Abbot Road to the North, Route 1 (outside the Post gates) to the South; Woodlawn Road to the east and Foster Road to the west. The grid that exists in the Lower North Post will generally be maintained; however there are a few roads that have fallen in to disrepair because they are underutilized and will be reconnected through this development plan.

Circulation in the study area is categorized into primary roadways, secondary roadways, and alleys. These designations are defined by roadway characteristics and frequency of use.

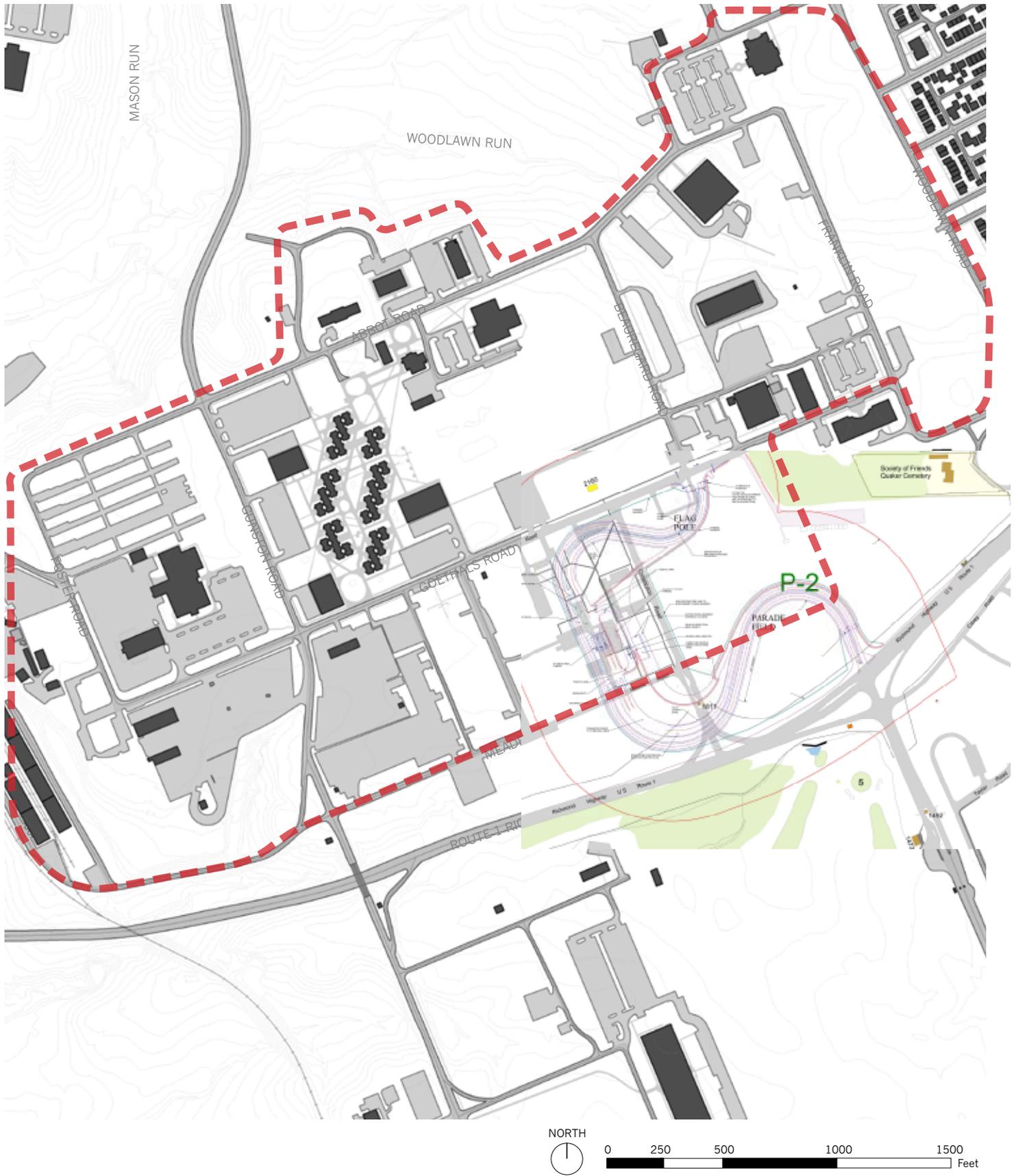
Primary roads provide main access into the Post and internal circulation between North and South Post, and are heavily traveled. The primary roadway serving the Lower North Post neighborhood is Gunston Road, which provides connection between Lower North Post and South Post, and connects to the roadways with ACPs. A new ACP will be constructed on the former Lieber Gate site to provide access to the Lower North Post neighborhood.

Secondary roads provide internal circulation within the Lower North Post neighborhood, and they include:

- Woodlawn Road provides access along the eastern boundary of Lower North Post and provides connection to the Community Support Center, and adjacent residential areas.
- Abbot, Goethals and Meads Roads provide east-west connections between Gunston and Woodlawn Roads.
- Foster, Beauregard and Franklin Roads provide internal circulation.

Intersections in the vicinity of the Lower North Post Area are unsignalized except for the intersection of Abbot and Gunston. Operationally, bottlenecks occur along Gunston Road in the Lower North Post neighborhood, in partly caused by the heavy traffic demand, as well as existing intersections that are stop-controlled instead of signalized. Stop-controlled intersections do not perform operationally as well as signalized intersections. This causes traffic congestion to occur on Gunston Road, as it is a major internal arterial for traffic circulation on Main Post.

Figure 3-8 Existing Road & Pedestrian Framework



4 Program Requirements

Overview

The following is a summary of the near term requirements and long term program strategy.

Existing Tenants and Functions

The Lower North Post is currently somewhat underutilized; there are not many intense uses, even the barracks area is developed at a fairly low density. The few industrial/vehicular uses will be moved to the Industrial area as part of a consolidation of all industrial activity on post to one location. These areas will also have to be cleaned up of any environmental issues before reuse and/or redevelopment. The McRee barracks will be renovated in the short term to create barracks that are more updated for the Troops; however in the future the barracks will be moving. Once this occurs the real redevelopment of the Lower North Post can begin. Once the barracks and the motor pool have been moved the area is available for phased redevelopment as an office area. This can happen as the need arises on post for more secure office space for DoD tenants. As the office uses expand

from the west to the east the final phase of development which is retail with high density housing above can be completed. This last phase will also join Lewis Village and the Lower North Post creating more of a neighborhood feeling for this area of Belvoir.

Proposed Projects

In the near term the only project for the area is the construction of a new Washington, DC National Guard Regional Training Center at the northeastern portion of the area. The remainder of the plans for the area can not go forward until there is a proposed plan for the movement of the Troop Village.

New Construction

In the near term the only new construction in the area is the new Washington, DC National Guard Regional Training Center. The remainder of the long term strategy hinges on the planned movement of the Troop Village. Any new construction projects that occur in the Lower North Post will be preceded by demolition of older buildings. This is due

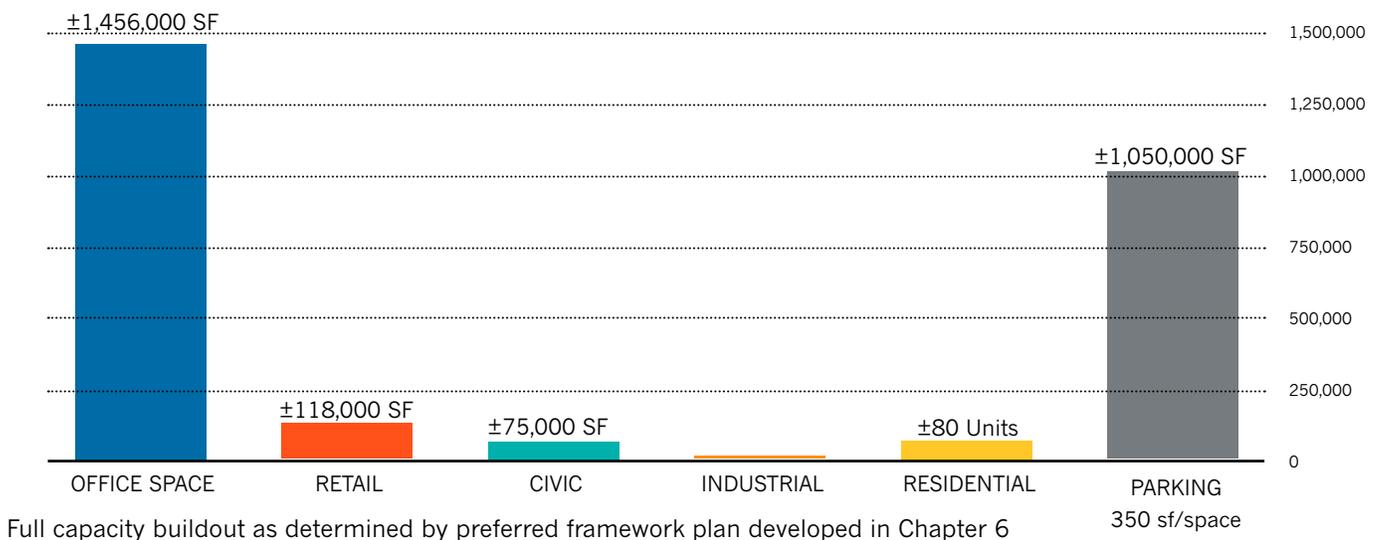
Table 4-1 Near Term Projects

Project Number	Project Name	PROJECT DESCRIPTION/ (COMMENTS)	FUNDING SOURCE	SIZE (GSF/PN)	CWE	1391 PROGRAM YEAR (FY)
n/a	DCNG Resources Training Center	Construct a DC National Guard training center on North Post at Gunston and Abbot Roads.	DCNG	54,600 SF (52 2-person dorm rooms)	\$13.6 M	2007
63571 (EIS # 15)	Access Control Point	Construct a fully monitored access to North Post directly opposite Pence Gate.	MCA	N/A	\$7.7 M	2009

to the fact that the area is largely developed or paved today and the plan is to reuse the entire area to create mixed use environment that is dominated by office/professional space. The near term plan is for some new residential units at the northeast portion of the area; these would serve as an extension of Lewis Village along Woodlawn Road. At the southern portion of the site the demolition of a motor pool and other maintenance uses would be replaced by approximately 250,000 square feet of office space.

The long term plan is that after the barracks are moved the old McRee barracks can then be demolished and the full redevelopment of office space can occur as it is needed. The area could contain as much as 1.4 million square feet of office and some residential and retail nearby. If the strategy for the redevelopment of Lower North Post is realized the only thing impeding future development is the transportation infrastructure of the region. The full detail can be found in Figures 8-2 and 8-3 and page A-2 "Strategy for Future Block Development."

Figure 4-1 Long-Term Program Capacity



5 Planning Principles



Figure 5-1 Lower North Post: Creating Important Connections

Overview

The Belvoir New Vision master plan embraces many principles from connected street grids, accessible open space and appropriate and compact development.

The recently established LEED for Neighborhood Development (ND) pilot program is aligned with these principles and provides an open forum to further organize and raise awareness of these complex and comprehensive issues. The LEED ND system emphasis is to:

- Revitalize existing urban areas
- Reduce land consumption
- Reduce automobile dependence
- Promote pedestrian activity
- Improve air quality
- Decrease polluted stormwater runoff
- Build more livable communities for people of all income levels

LEED for Neighborhood Development

Implementing best practices in sustainable design is key for the post to maintain its long standing commitment to conserve the natural beauty of the land and preserve their standing as one of America's enduring installations. The purpose of the LEED ND pilot program is to provide an accessible and comprehensive framework to make environmentally sensitive and livable places. The framework incorporates the principles of smart growth, new urbanism and green building technologies. Participation in the program would be a first for the US Military and will help provide an example for other installations for Fort Belvoir to continue as a model world-class installation.

What is a "Neighborhood Development"? The LEED ND rating system is designed to certify exemplary development projects that perform well in terms of smart growth, new urbanism, and green building.

The LEED ND rating system is organized into three sections: smart location and linkage, neighborhood patterns and design, and green construction and technology.

Smart Location and Linkage

The goals and intent of the smart location and linkage principles are largely addressed within Chapter 3 (Existing Site Character) in the mapping of natural constraints and defining where to build and where not to build.

Neighborhood Design and Pattern

Chapter 6 (Planning Framework) addresses many of the credits in the Neighborhood Design and Pattern section regarding compact development, walkable neighborhoods and diversity of uses.

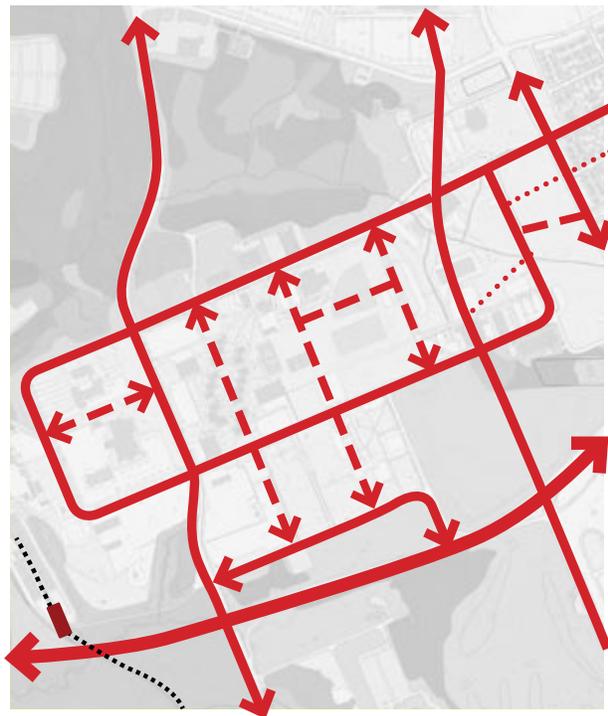
Green Technologies and Construction

Strategies to address the green technologies and construction are contained within Chapters 7 (Planning Recommendations) as well as Chapter 8 (Implementation) to ensure that the future projects within the ADP will maintain the highest standards of construction. This is in conjunction with meeting the current Federal Mandates in both water and energy consumption and achieving individual building certification under the LEED for New Construction where required.

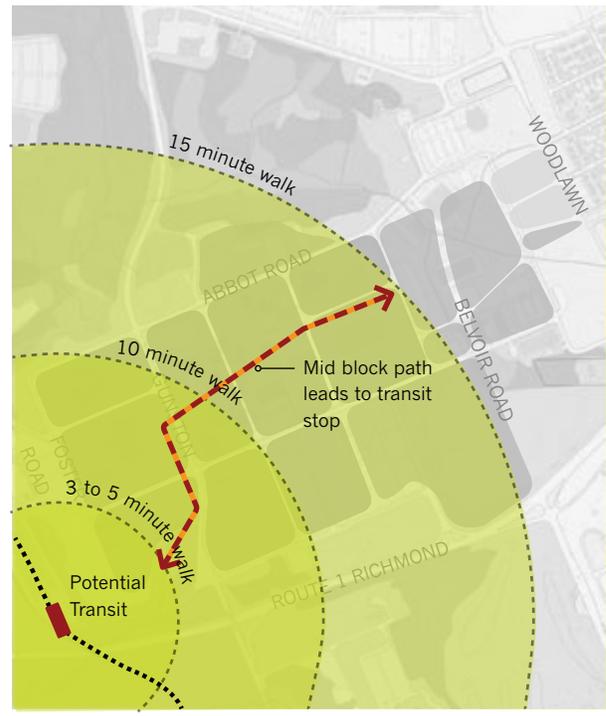
General Planning Principles

- **Buildings should reinforce the common campus edges.** This includes the central open space. Buildings should be in conversation with one another. An attention to the compatibility of uses and building typology is critical along any common campus areas.
- **Locate parking at the perimeter of each campus** area along the major access routes. This will reinforce standoff requirements and provide optimal development area for programs.
- **Connect buildings and places** with pedestrian paths and a series of “campus gardens“.
- **Maintain and preserve views** and sight lines to important open spaces from each campus area
- **Develop a hierarchy of streets** and points of access that are coordinated with the larger transportation strategy.
- **Reinforce a comprehensive strategy for security** and AT/FP requirements that is integrated with building siting, access and overall development concept.
- **Initiate collective approaches** for stormwater management, ancillary uses, and remote truck inspection areas that share resources to optimize site development and program integration.
- **Promote sustainable strategies** that minimize development impact and embrace forward thinking and best practices in site planning, open space design, and architecture.
- **Develop a feasible and constructible strategy** that is sensitive to schedule and costs.

Figure 5-2 Lower North Post Planning Principles



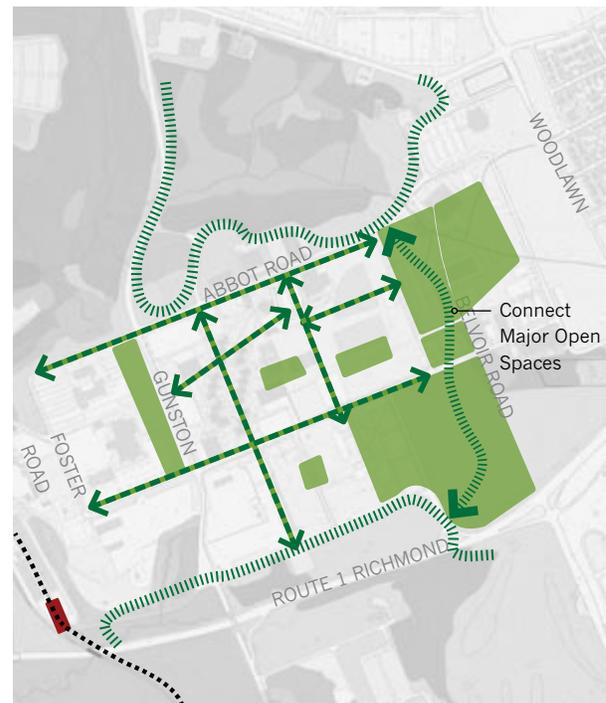
Streets



Transit



Blocks and Pedestrian Paths



Open Space



6 Planning Framework

Overview

The goal of a planning framework is to establish a street framework and block pattern that can allow for a variety of scenarios of intensity or diversity of use. The planning principles endorsed with LEED ND to encourage compact growth, promote pedestrian activity, improve air quality, etc work together to create a living framework that can be adjusted without sacrificing the quality of place in response to future needs of tenants as the neighborhood continues to grow and develop. The end state of the intensity and use will be a balance within the recommended framework allowing for the flexibility to respond to future demands.

Required NEPA Documentation

Any of the actions that are planned for the Lower North Post would need to have an Environmental Assessment before commencing. However, since the area is already heavily developed that should not be an exhaustive National Environmental Policy Act (NEPA) process. The only area that may require more environmental evaluation is the area that is presently occupied by the motor pool, vehicle maintenance and flammable storage as there may be some issues with clean up of the soil before anything can developed there.

Framework Plan Alternatives

Before arriving at the preferred plan, several alternatives were explored in order to ensure all implications of a siting decision are understood and to illustrate different means of achieving the common planning principals. Each alternate scheme generates varying amounts of new building construction based on the amount of space designated for outdoor motor pools and storage. New building efficiencies are also affected by the building size and the amount of existing buildings that may be preserved.

The various alternatives were discussed from renovating the existing McRree Barracks to developing a high density administrative campus in the Lower North Post area.

Alternative A: No Intervention

- Troop village and its support facilities as major uses
- Renovate the existing barracks by 2010

Alternative B: Low Density Office/Admin. Campus

- Relocate the troop village to a new location with new army standard barracks
- Develop the low density office and administrative campus
- Not an optimal use of the land

Alternative C: High Density Office/Admin. Campus

- Relocate the troop village to a new location with new army standard barracks
- Develop the higher density office and administrative campus
- Anticipate and plan for the future higher space demand from Department of Defense

Figure 6-1 Framework Plan Alternatives

- Land Use Legend
- Community (CMY)
 - Professional_Institutional (PRO)
 - Residential (RES)
 - Troop (TRP)



Alternative A: No Intervention



Alternative B: Low Density Office/Administrative Campus



Alternative C: High Density Office/Administrative Campus

Evaluation Criteria

Use the following determination factors when evaluating:

1. What are the environmental impacts and benefits?
2. What are the cost differentials?
3. What are the operational cost savings?
4. What are the long term maintenance implications?
5. Is the aesthetic and design consistent with the Installation Design Guide?
6. Are the strategies compatible with intended use?

The intent of the compact development credit of the Neighborhood Pattern and Design section of the LEED ND program is to 'Conserve land, promote livability, transportation efficiency and walkability.'

Preferred Framework

The preferred framework is illustrated in Figure 6–4. This framework allows for the flexibility of any of the alternatives described in the previous chapter to be achieved. The goal of this ADP is to take advantage of the fact that the Lower North Post area sits on the developable plateau of Belvoir and blocks that encourage vibrant, inclusive and sustainable pattern of development.

The framework encourages compact development with a recommended density for non-residential of 1.0 Floor Area Ratio (FAR) and build any residential components of the project at an average density of seven or more dwelling units per acre of buildable land available for residential uses. If achieved, Lower North Post could accommodate almost 2,000,000 square feet of space.

Figure 6–2 Lower North Post Area Block Framework

Block No	Land Use	Area-SF (Measured)	Area-SF (Rounded)	Area (Acres)
C1	DC National Guards Resources Training Center	342,671	343,000	7.9
C2	Office/Retail	501,869	502,000	11.6
C3	Office	473,453	474,000	10.9
C4	Office	635,502	636,000	14.7
C5	Existing Fitness Center	266,359	267,000	6.2
C6	Office	448,595	449,000	10.4
C7	Retail/Residential	214,563	215,000	4.8
C8	Residential	118,274	119,000	2.8
C9	Residential	99,456	100,000	2.3
C10	Office	678,428	679,000	9.5
C11	Office	411,357	412,000	9.9
C12	Office	429,722	430,000	7.1
C13	Mixed	308,821	309,000	7.7
TOTAL		4,929,070	4,935,000	108

Figure 6-3 Preferred Framework



7 Planning Recommendations

Development Strategy

- As part of the future connection over Route 1, reposition the existing P2 Field slightly to the north and west
- Emphasize important pedestrian linkages and new “places of exchange” and amenities within the new office campus that encourage walking
- Redevelop the area between Gunston Road and an extended Belvoir Road as a new office campus
- Locate parking in the middle of the blocks and away from major pedestrian areas
- Extend Lewis Village with additional housing west of Woodlawn Road to an extended Belvoir Road
- Maintain existing open space and woodland areas.

Relationship to Long Range Development Plan

Redevelopment of the Lower North Post will also adhere to these important guiding principles, specifically:

- Increase density of current facilities
- Optimize use of existing roads, parking, outdoor loading areas, and other paved areas
- Increase diversity of campus functions – to allow locating noisy/unsightly facilities with bigger footprints behind buffers comprised of smaller, community-oriented facilities
- Increase diversity of functions within each cluster – to allow for a gradual transition between land use clusters and create better functioning, more visually appealing environments.

Figure 7-1 Long Term Proposal for the Lower North Post



7 Planning Recommendations

Table 7-1 Proposed Lower North Post Building Development Summary

Block	Building No.	Primary Use	Building Footprint-SF (Rounded)	No. Floors	Total GSF	Dwelling Units 1,500 sf/du	Parking Garage 350 sf/car	Notes
C1	1	OFFICE	40,000	2	80,000			
C2	1	PARKING GARAGE	57,000	4			650	
	2	OFFICE	20,000	3	60,000			
subtotal					60,000		650	
C3	1	OFFICE	16,000	3	48,000			
	2	OFFICE	20,000	3	60,000			
	3	OFFICE	26,000	3	78,000			
	4	PARKING GARAGE	43,000	5			610	
subtotal					186,000		610	
C4	1	OFFICE	20,000	3	60,000			
	2	OFFICE	33,000	3	99,000			
	3	OFFICE	20,000	3	60,000			
	4	OFFICE	24,000	3	72,000			
	5	PARKING GARAGE	32,000	5			460	
	6	OFFICE	20,000	3	60,000			
subtotal					351,000		460	
C5	1	CIVIC	54,000	1	54,000			Fitness Center
C6	1	PARKING GARAGE	53,000	5			760	
	2	OFFICE/RETAIL	25,000	3	75,000			
	3	OFFICE/RETAIL	24,000	3	72,000			
	4	OFFICE/RETAIL	21,000	3	63,000			
subtotal					210,000		760	
C7	1	OFFICE/RETAIL	20,000	3	60,000			
	2	PARKING GARAGE	22,000	4			310	
subtotal					106,000	30	310	
C8	1	RESIDENTIAL	13,000	2	26,000	20		
C9	1	RESIDENTIAL	26,000	2	52,000	30		
C10	1	PARKING GARAGE	51,000	5			730	
	2	OFFICE	21,000	3	63,000			
	3	OFFICE	26,000	3	78,000			
subtotal					141,000		730	
C11	1	OFFICE	20,000	3	60,000			
	2	OFFICE	14,000	3	42,000			
	3	OFFICE	24,000	5	120,000			
	4	PARKING GARAGE	32,000	5			460	
subtotal					222,000		460	
C12	1	OFFICE	16,000	3	48,000			
	2	OFFICE	14,000	3	42,000			
	3	OFFICE	20,000	3	60,000			
	4	OFFICE	15,000	1	15,000			
	5	PARKING GARAGE	40,000	5			570	
subtotal					165,000		570	
C13	1	CIVIC	7,000	1	7,000			Wood Theater expansion
TOTAL NEW (ROUNDED)					1,700,000	80	4,500	

Figure 7-2 Building Development Strategy for the Lower North Post



7 Planning Recommendations

Building Siting

Encourage the design and construction of buildings to utilize green building practices. Design, construct, or retrofit one building as part of the project to be certified under one of the following

LEED building rating systems: LEED for New Construction, LEED for Existing Buildings. Encourage the design and construction of energy efficient buildings to reduce air, water, and land pollution and environmental impacts from energy production and consumption.

LEED Standards

The following are LEED standards relating to the Lower North Post and should be considered during the implementation phase:

- Evaluate existing facilities for continued use and reuse

Encourage site planning strategies that:

- Reduce environmental impacts through site selection
- Provide alternative transportation
- Protect open space and reduce site disturbance by reducing development footprint
- Implement stormwater management to control flow-rate and treatment
- Landscaping to reduce heat impacts
- Create water-efficient landscaping
- Reduce water use
- Use renewable energy



Siting of buildings reinforces entry and public space

Sources:
1. www.usgbc.org downloaded on May 17, 2007
2. The U.S. Green Building Council, LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects, October 2005
3. The U.S. Green Building Council, Green Building Rating System for New Construction and Major Renovations (LEED-NC), Version 2.1, March 2003
4. The U.S. Green Building Council, Green Building Rating System for Existing Buildings, Upgrades, Operations and Maintenance, Version 2, July 2005

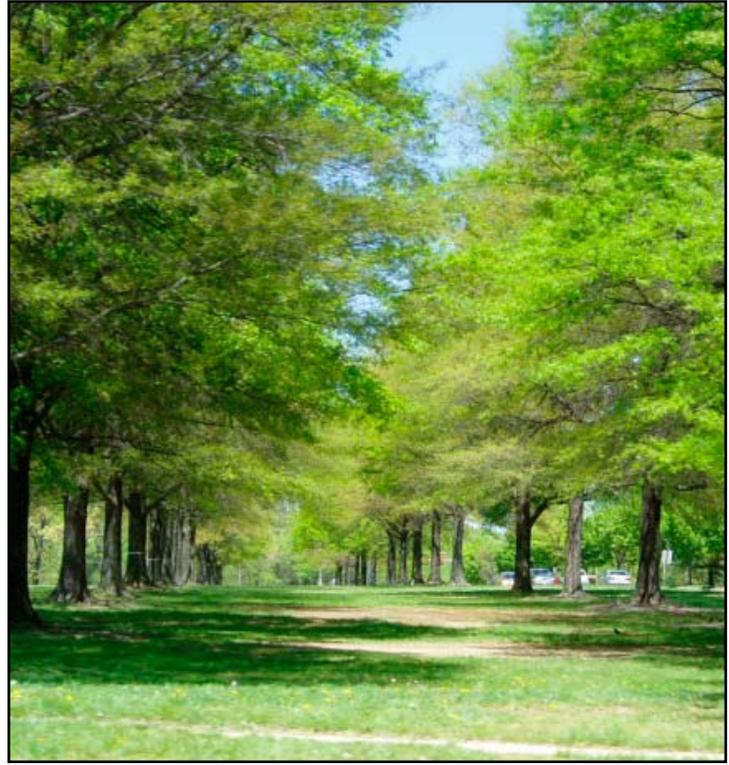


Figure 7-3 Building Siting
 Siting of buildings reinforces entry, public space, vehicular and pedestrian areas while achieving AT/FP requirements

Environmental Strategies

Green Infrastructure

- Replicate hydrological processes of indigenous forest
- Equate allowable potable water use to average annual rainfall over site
- Increase native species diversity and area of coverage
- Attain carbon neutral base operations
- Retain and recycle all nutrients on-site using natural processes
- Maintain adjacent interior forest temperature in developed areas



Landscape

Bioretention Systems

Utilize native landscaping and soils to treat stormwater runoff by collecting it in shallow heavily landscaped swales and basins.

Environmental Benefits

- Detain and Filter Stormwater on site.
- Recharges groundwater and sustains flows to natural water bodies.
- Reduce Pollutants in Stormwater Runoff.
- Diversify Site Habitat

Financial Benefits

- Reduce Maintenance Costs - compared to conventional lawn surface or irrigated plantings.
- Aesthetic Value
- Reduce need for costly Stormwater Infrastructure



Buildings - Green Roofs

Environmental Benefits

- Water Conservation/ Reduced Stormwater Runoff
- Fire Prevention
- Habitat Recreation
- Noise Reduction

Financial Benefits

- Conservation of Water Management Systems
- Extension of Roof Life
- Energy Conservation
- LEED Certification Points
- Aesthetic Value



LiveRoof System - www.LiveRoof.net

- Easily handled and transported
- Implement on both new and existing structures.
- Reduce Costs - Cultivate native plant life from seeds.
- Plantings can grow offsite during construction or retrofit or within vacant paved areas as temporary greenhouses.

Parking

Reduce heat islands to minimize impact on microclimate and human and wildlife habitat. Requirements

Provide the following strategies for the non-roof impervious site landscape (including roads, sidewalks, courtyards, parking lots, and driveways):

- Shade (within five years of occupancy)
- Paving materials with a Solar Reflectance Index (SRI) of at least 29
- Open grid pavement system
- Place off-street parking spaces under cover

Porous Concrete

A specific mix of concrete creates stable air pockets to be encased within it, allowing water to drain uniformly through the material into the ground below.



Administrative Building Analogies



Bowdoin College



John Hopkins University, Tod Williams Billie Tsien Architects



SOM, Greenwich Academy Upper School



Herman Miller Offices, William McDonough + Partners



John Hopkins University, Tod Williams Billie Tsien Architects



SOM, Electronic Arts

Infrastructure Strategy

Long term planning and construction phasing

The Area Development Plan for Lower North Post significantly reconfigures the existing road networks. New building locations as proposed in the ADPs will conflict with many of the existing utilities. Since much of the existing water, sanitary sewer, and storm drainage systems are over 50 years old and nearing the end of their useful life, we recommend that the construction plan provide for replacement of most of the existing systems in each area. This may also provide an opportunity to construct more efficient utility networks with potential operational savings; for example, some existing pump stations which will require replacement or expansion can be combined.

We have developed potential water distribution, storm drainage, and sanitary collection systems for each of the Area Development Plans to serve as guidance for replacing and relocating these systems as new development is funded. These are described below. Overall conceptual sanitary, water and storm layouts are shown in Figures 7-5 to 7-7.

We also developed preliminary calculations to determine the quantity control volumes needed with the anticipated redevelopment. Approximate facility sizes are shown assuming a five-foot depth of storage. Quality control will also need to be provided; it could be provided within the quantity volumes shown or be provided separately. Facility locations were determined based on space and the topography of the area.

Ultimate development to the densities shown in the long-term strategy will require a combination of surface treatment for quality control, with above ground basins or below ground storage to provide the required quantity control. The conceptual storm plan can be used to guide location and design of drainage systems as future projects are authorized.

Design of all new facilities which require relocation or replacement of existing utilities should consider the ultimate anticipated development in the surrounding area, including the entire upstream sanitary or storm drainage-shed. New infrastructure should be designed to serve the new building; the existing adjacent facilities to remain; and, to the extent possible, the ultimate development in the adjacent area. For example, if a new building requires relocation of an existing 8-inch water main, and ultimate development requires the main to be increased to 12-inches; the portion of the main being relocated should be constructed to the ultimate 12-inch size. Similarly, new storm water conveyance facilities and new sanitary sewers should be designed and constructed for the ultimate anticipated flow from the upstream area. New storm water management facilities should be designed with adequate area to allow for expansion to serve future development in the drainage area.

Assuming that quality control is provided by rain gardens or similar low impact development (LID) facilities near each new building; additional quantity control is provided by a storage facility located to serve several blocks of the area. When the initial building is constructed, possibly with temporary surface parking, an LID facility is built adjacent to it, and the first portion of the quantity control facility is built. As additional buildings are constructed, surface parking is replaced with structured parking, additional LID facilities are built, and the quantity control facility is enlarged. Eventually the quantity control facility may be replaced by an underground structure to provide quantity storage.

Conceptual Utility Plans

Sanitary:

Based on the ADP, essentially all of the Lower North Post Area's existing sanitary system will need to be abandoned and reconstructed, since they will conflict with the new buildings proposed in this area. New sewer lines will be installed to pick up the flow from proposed buildings along Abbott Road and Goethals Road, running toward the east to tie into the existing sanitary system in the vicinity of the Goethals Road/ Franklin Road intersection. (This existing line also conveys flow from the Community Support Center, INSCOM, and Lewis Village.)

The buildings in the southwest corner of the Lower North Post area could flow south along Gunston Road and tie into the existing gravity sewer that runs parallel to and just south of Route 1. Diverting this area directly to the Route 1 sewer may reduce the depth of new sanitary sewer to the east on Goethals Road.

A layout of the proposed sanitary sewer system is shown in Figure 7-4.

As final building sizes and locations are developed in this area, a capacity analysis (based on surveyed pipe slopes and anticipated populations) should be performed to determine whether the existing downstream sanitary sewer pipe is adequate for proposed development.

Storm water Management:

Storm runoff from the Lower North Post Area discharges primarily to the north into Woodlawn Run. The SWM facilities proposed in the northern part of the area will discharge to the same stream, which eventually flows to Mason Run. The southern portion of Lower North Post, adjacent to Route 1, discharges to an unnamed tributary of Accotink Creek. Refer to Figure 7-5 for the proposed SWM plan for Lower North Post.

Water:

A new network of water lines will be needed to accommodate the proposed new development at the Lower North Post Area. Connections to the existing network could be at the perimeter of the Lower North Post Area along Woodlawn Road and Gunston Road in the North-South direction and along Abbot Road, Meade Road, and Goethals Road in the East-West direction. Some connections can be made within the pipe network, primarily along Beauregard Road. Refer to Figure 7-6 for the proposed water system layout.

Power

Existing System - Supply

The Main Post of Fort Belvoir is supplied power by Dominion Virginia Power under the rate schedule MS – Federal Government Installations.

Existing System - Distribution

In the Lower North Post, the current distribution system is adequate for existing functions. If additional supply is needed in the future, Dominion Virginia Power should be able to provide the Lower North Post with additional capacity

Natural Gas

Existing System - Supply

Washington Gas supplies natural gas to Fort Belvoir and the surrounding community.

The gas company has a robust distribution system in the area that appears capable of providing adequate natural gas.

Existing System - Distribution

In the Lower North Post, the current distribution system is adequate for existing functions. If additional supply is needed in the future, Washington Gas should be able to provide Lower North Post with additional capacity

Security Strategy

Fort Belvoir refocused the posture of its security and force protection efforts in response to the terrorist attacks on September 11, 2001. The result of this effort is the current Anti-Terrorism and Force Protection (AT/FP) Plan being used to guide the installation's preparedness posture. Concurrently, Fort Belvoir is being reconfigured to accommodate specific recommendations outlined first by the Base Realignment and Closure Commission Report

in 2005, then enacted into public law and implemented through Army direction.

In order to ensure future building and infrastructure projects at Fort Belvoir are planned with appropriate consideration of AT/FP measures, the Long Range Component plan offer planners and decision makers an awareness of how the AT/FP Plan and Fort Belvoir's Real Property Master Plan complement and interrelate with each other.

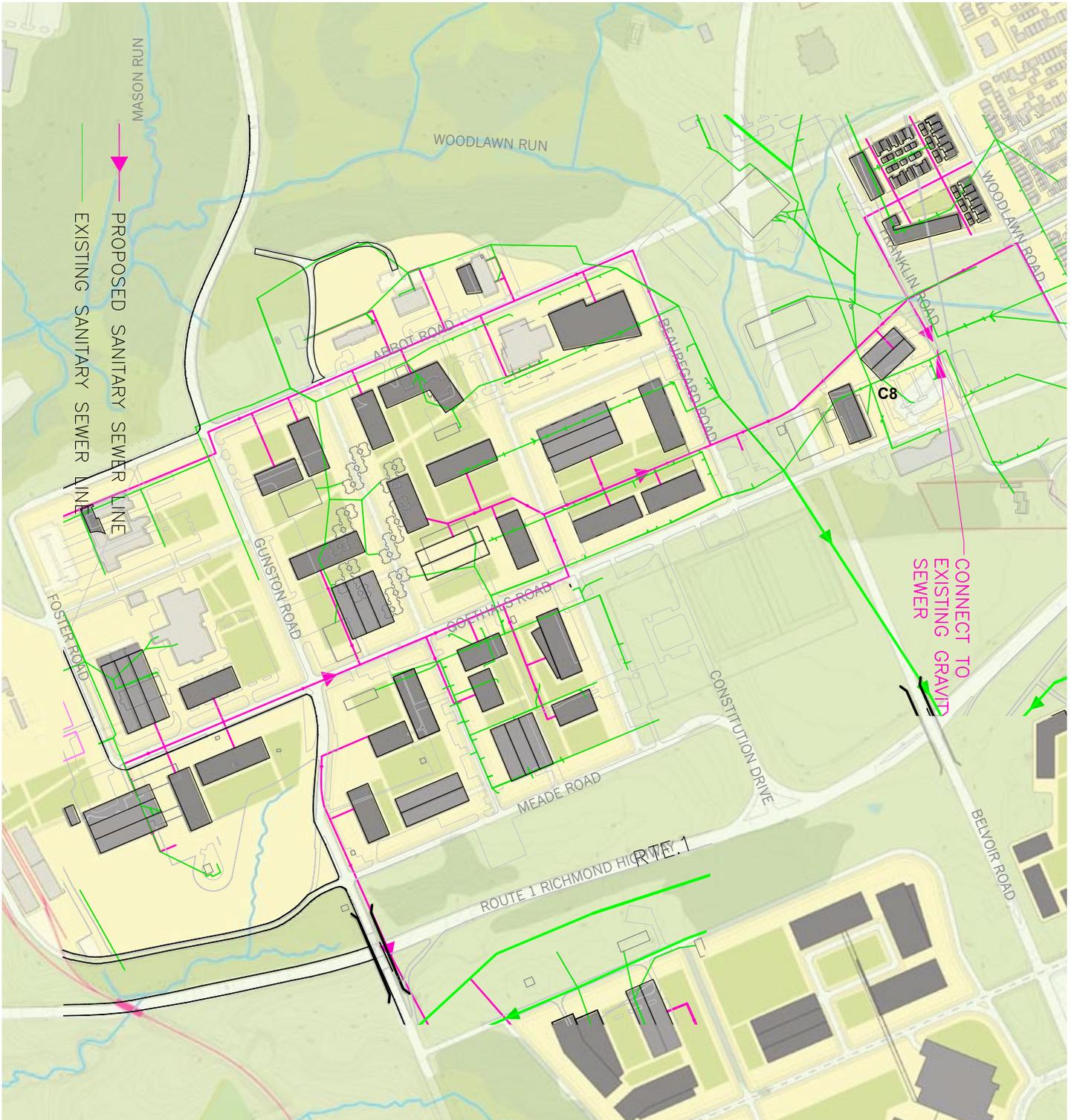
AT/FP Planning

Because threats change over the life of a facility, building owners and facility managers should be aware that security elements can be more economically integrated within structures during the early planning and design phases of new construction projects than during subsequent additions or renovations.

Renovations to existing buildings can be challenging because the existing building systems must be able to accommodate increased security requirements and may not have the additional space or upgrade capacity. Therefore, it is imperative that AT/FP planning begin at the earliest opportunity. The key to a successful security master plan begins at the initial conception of both new construction and renovation projects and not at the end of the design process. Coordination and effective communication are essential in this process and should start prior to a Planning Charrette. The tenant or user should assemble a Planning Team which may include representative staff from Garrison Directorates: Logistics, Intelligence, Security, Operations, and Public Works. The team then begins the AT/FP planning:

- Step 1: Identify and categorize assets
- Step 2: Assess asset value
- Step 3: Identify aggressors and assess likelihoods
- Step 4: Identify tactics and severity
- Step 5: Consolidate into design basis threat
- Step 6: Determine levels of protection
- Step 7: Identify design constraints.

Figure 7-4 Infrastructure Strategies

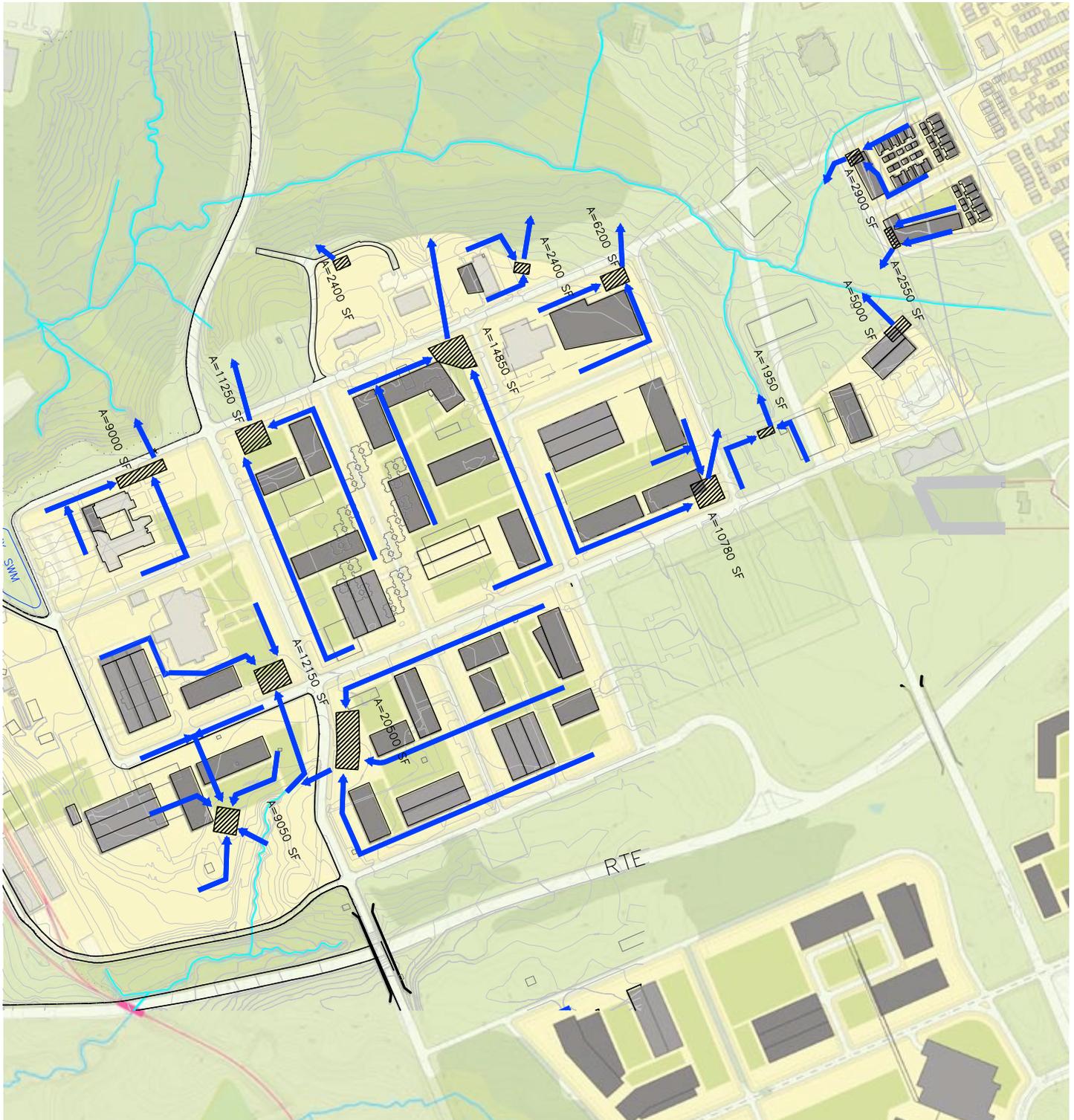


Fort Belvoir Utilities: Proposed Sanitary System

 Proposed Sanitary Sewer Line



Figure 7-5 Infrastructure Strategies

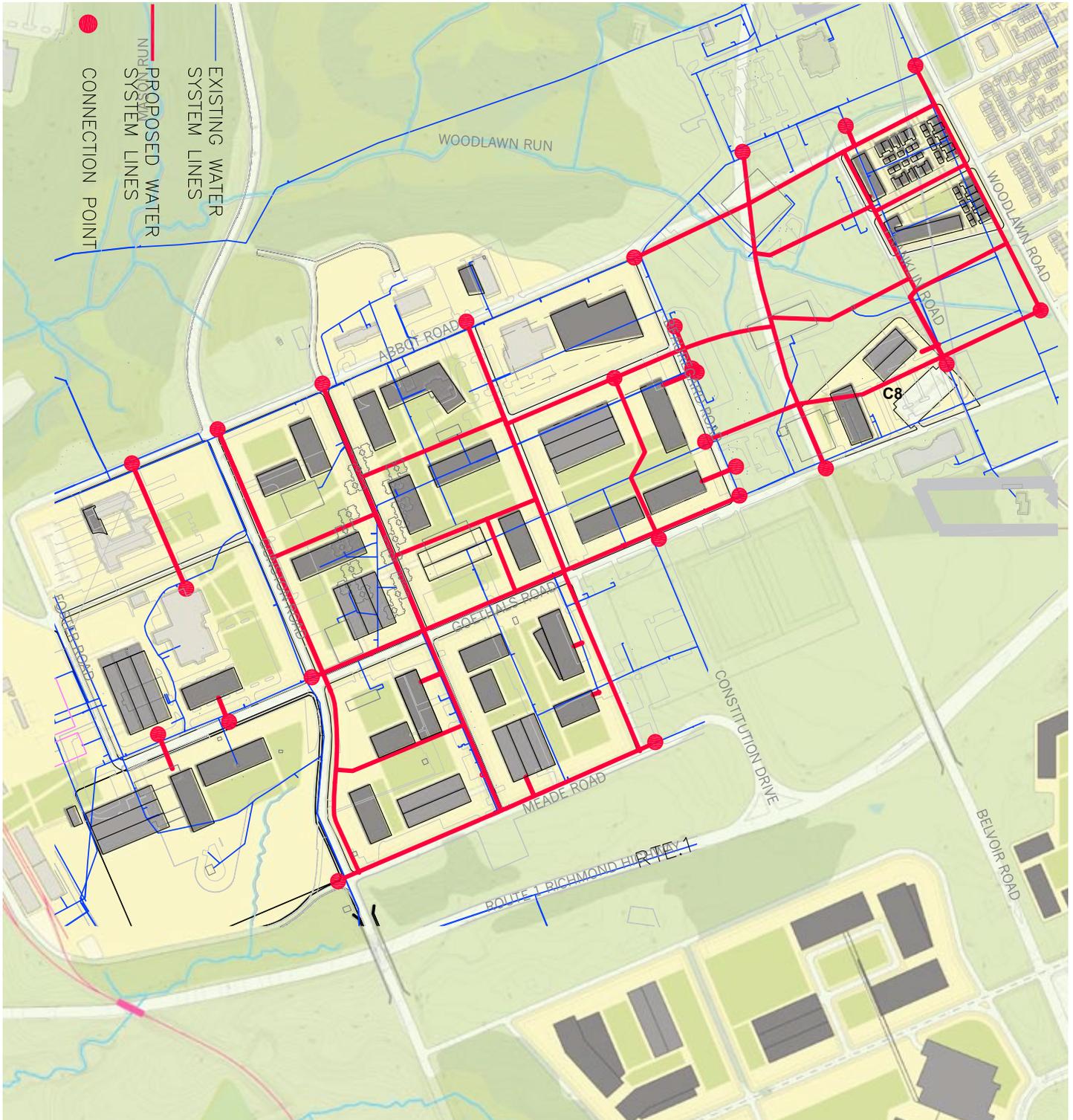


Fort Belvoir Utilities: Proposed Storm Sewer System

-  Possible Storm Water Management Area (Assumed Typical 5ft Depth)
-  Possible Future Drainage System (Swale, Channel, or Pipe)



Figure 7-6 Infrastructure Strategies



Fort Belvoir Utilities: Proposed Water System

- Proposed Water System Lines
- Connection Point



Circulation Patterns/ Transportation Management

The Master Plan lays out the long term vision for Fort Belvoir. It includes roadway improvements such as widening, intersection signalization and inclusion of pedestrian/bicyclist circulation.

Vehicular Circulation

Because roadways are the primary means of transportation around the Post, these significantly impact the visual impression that visitors and Post personnel have of Fort Belvoir. Therefore, it is important that roadway design implement the following objectives:

- Facilitate orientation
- Provide efficient vehicular circulation
- Establish a clear circulation hierarchy to enhance the visual structure of the Post
- Enhance quality of life through greater safety and convenience
- Contribute to the image of Fort Belvoir as a unified, high-quality visual environment
- Improve and expand the present trail/bike path system by linking neighborhoods with schools, recreational areas, and points of interest On-Post
- Develop walking/jogging paths that link urban and natural areas on Post, while taking advantage of important views or vistas
- Enhance the character of streets with appropriate lighting, signage, furnishings, and plantings

Pedestrian Circulation

Strongly defined pedestrian corridors between major Post activity nodes – such as office buildings, and retail, residential and community support functions, etc. – are essential to successful development of a Post. Design considerations that improve pedestrian circulation should also:

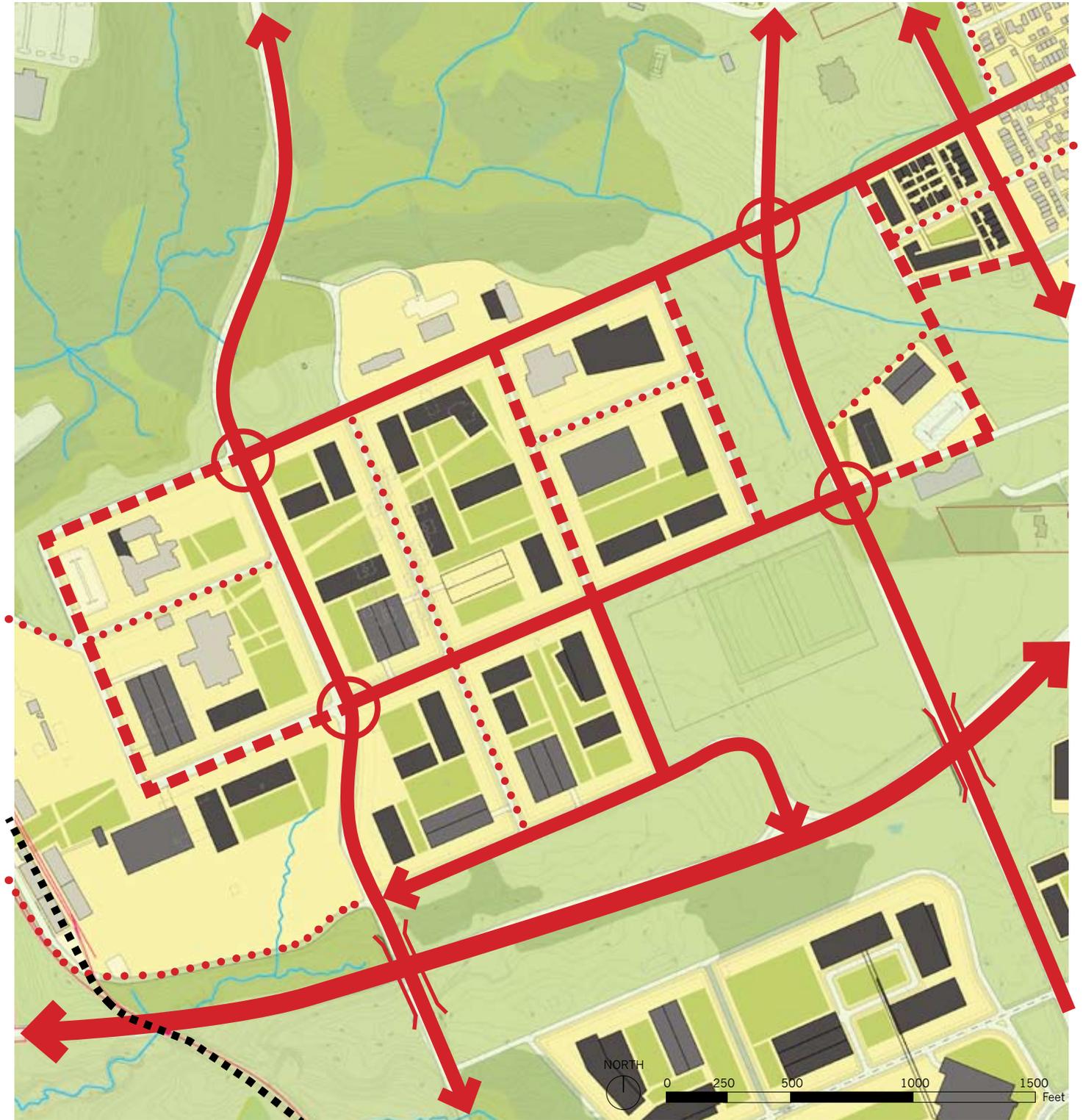
- Encourage pedestrian travel and other outdoor activities
- Strongly define open spaces
- Improve the image of developed areas on Post

To meet these goals for vehicular and pedestrian circulation, the proposed roadway projects in the Lower North Post neighborhood include:

- Extension of Belvoir Road as a four-lane road, including a grade-separation over Route 1, onto North Post and realigning into Woodlawn Road.
- Widening of:
 - o Gunston Road to four lanes from Kingman Road to 12th Street
 - o Abbot Road to four lanes between Gunston and Woodlawn Roads
 - o Goethals Road to four lanes between Gunston and extended Belvoir Road
 - o Meade Road to four lanes from Gunston Road to the Lower North Post ACP
- Improving internal circulation roadways, such as Foster, Beauregard and Franklin Roads
- Signalization of intersections around the Lower North Post area
 - o Gunston and Abbot
 - o Gunston and Goethals
 - o Gunston and Meade
 - o extended Belvoir and Abbot
 - o extended Belvoir and Goethals
 - o Route 1 and access to the Lower North Post ACP
- Inclusion of pedestrian and bicycle facilities as part of roadway improvements, so to provide internal circulation paths for pedestrian and cyclists, and to link the Lower North Post neighborhood to adjacent land uses.

These roadway projects and intersection improvements would improve the traffic circulation, and provide the opportunity for walking and cycling as an alternative to the automobile for short trips on Main Post.

Figure 7-7 Transportation Strategy - All Transportation Improvements by 2030



- Roadway Widening/Extension with 4 lanes
- Secondary Roadway
- Local Road / Alleyway
- Potential Transit Corridor
- New Traffic Signal needed

8 Implementation

Phasing and Funding

The first phase of any new development that could occur by or before 2015 (refer to Figure 8-2 “Near Term Development”) will mean that some of the existing development will need to be demolished and/or replaced. Details for the phasing of the Lower North Post can be found on the “Proposed Framework Plan” along with the “Strategy for Existing Facilities” in Appendix A-1 and Figures 8-2 and 8-3 showing “Near Term Development ” and “Long-Term Development” which illustrates that most of the potential growth will occur after 2015.

Updating the Plan

The development strategy that was created for the Lower North Post creates a vision for the short and long term development of the area. This vision of how the area could be redeveloped creates a plan that doesn’t need to be updated until this occurs. If redevelopment does occur the only thing impeding future development is the transportation infrastructure of the region.

Near Term Strategy

The construction of the new Washington, DC National Guard Regional Training Center at the northwest portion of the Lower North Post is the earliest project that will be started in the area. The next two projects will occur after the relocation of some others. First the motor pool, maintenance shop and flammable storage area will move to the Industrial Area; this will make room for the construction of approximately 250,000 square feet of office space between Goethals Road and Meade Road. The other project is the temporary relocation of the Troop dining facility to make room for between 50 – 80 new homes between Woodlawn Road and Franklin Road at the east of the area. The near term development strategy layouts all of these projects out graphically and with accompanying charts.

Long Term Strategy

The long term strategy for the Lower North Post will begin to develop once the new Troop Village is moved elsewhere on the installation. Once the barracks are replaced the old McRee barracks can be demolished to make room for a mix of office space, commercial/ retail space and residential; along with the open space and parking that is needed for those uses. Once redevelopment occurs there could be up to 1.2 million square feet of office; 80,000 square feet of retail and, 80 new units of residential in this area. Refer to Figure 8-3 Long-Term Development Strategy.

LEED ND Certification

As stated in Chapter 5 (Planning Principles) it is the intent of the master plan and ADPs to implement best practices in sustainable design by encouraging the principles of the LEED ND pilot program. It is also the intent of the ADP to require each project and capital investment greater than 20 acres within the installation to meet the requirements of LEED ND certification. The full masterplan of Belvoir New Vision is participating in the LEED ND pilot program, and all future projects are expected to participate in the full program, which should launch in early 2009. A LEED ND checklist has been included in appendix A-8 and more information can also be accessed from the U.S. Green Building Council. The numerical rating presented in the checklist is based on the entire installation as one project the actual ratings based on individual projects will vary based on size and use.

Figure 8-1 Future mixed-use Lower North Post as Recreation and Office



Figure 8-2 Near-Term Development

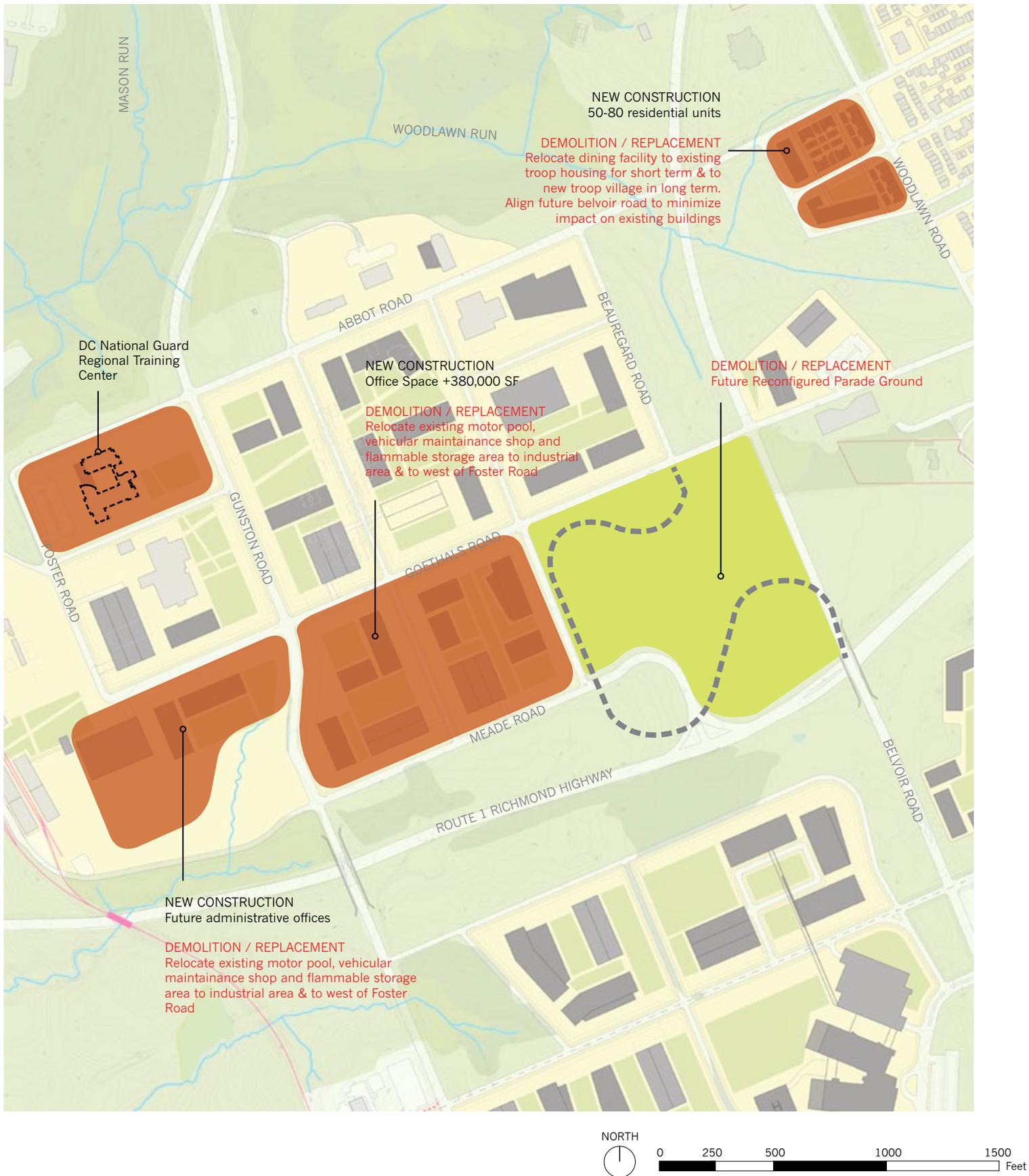


Figure 8-3 Long-Term Development Strategy



Appendices

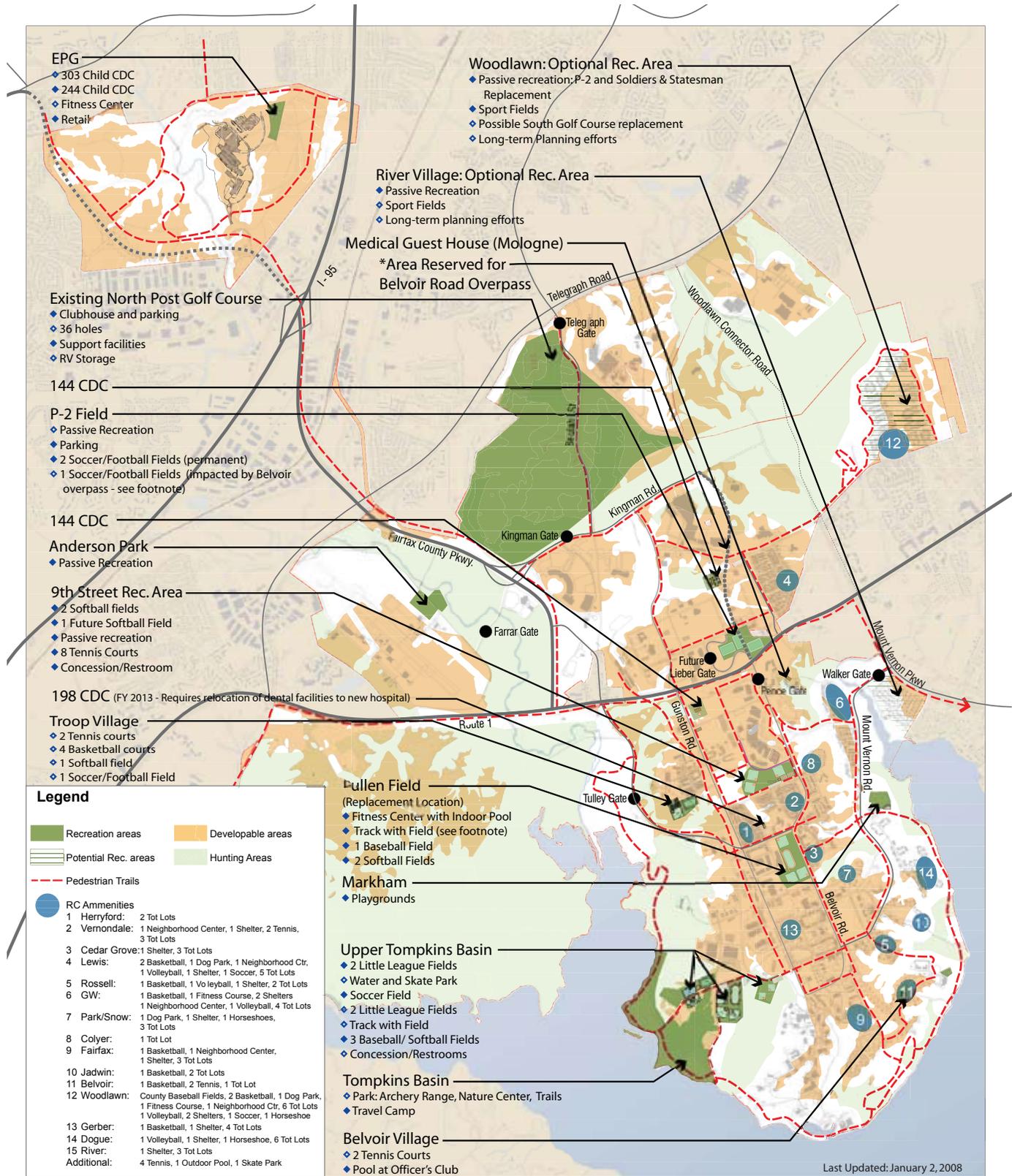
Strategy for Existing Buildings



Town Center Existing Buildings

ID	STRUCTURE NAME	GROUND AREA	HEIGHT	LEVELS	BUILT	ISR RATING	USE	GSF	ACTIONS	ACTIONS NOTES	
1801	CHAPEL	19,842	SQFT	10	FT	1	2004 Q-1	CIVIC	19,842	Remain	
1809	ADMIN, GEN PURP	26,320	SQFT	30	FT	1	1961 Q-1	OFFICE	26,320	Demolish-Near Term	Relocate to consolidated office within Lower North Post or to Town Center
1810	WELLS FIELD HOUSE	27,138	SQFT	45	FT	1	1947 Q-3	CIVIC	27,138	Demolish-Long Term	Relocate Wells Field House to new troop village or to new 9th Street recreation area
1812	NMUSA OPERATIONS	12,982	SQFT	10	FT	1	0	OFFICE	12,982	Demolish-Long Term	Could be relocated to consolidated office within Lower North Post or to Town Center
1822	DINING FACILITY	39,210	SQFT	22	FT	1	0 Q-3	TROOPS	39,210	Demolish-Near Term	Relocate dining facility to existing troop housing for short term & to new troop village in long term
1827	SUBSTATION						1948			Demolish-Long Term	
1832	SEWAGE PUMPING STATION	193	SQFT	10	FT	1	1945	UTILITY	193	Demolish-Near Term	Relocate within Lower North Post
1839	CENTER FOR ARMY ANALYSIS (CAA)	23,669	SQFT	35	FT	1	0 Q-1	OFFICE	23,669	Remain	
1905	GREASE RACKS	394	SQFT	11	FT	1	1981 Q-2	INDUSTRIAL	394	Demolish-Near Term	Relocate
1906	VEH MAINT SHOP, ORGN	5,372	SQFT	20.5	FT	1	1981 Q 4	INDUSTRIAL	5,372	Demolish-Near Term	Relocate
1913	SUBSTATION	469	SQFT	10	FT	1	1975 Q-1	UTILITY	469	Demolish-Near Term	Relocate within Lower North Post
1943	STOREHOUSE, FLAMMABLE MTRL	264	SQFT	9	FT	1	1980	INDUSTRIAL	264	Demolish-Near Term	Relocate to Industrial Area and west of Foster Road
1946	GREASE RACK	159	SQFT	15	FT	1	1963	INDUSTRIAL	159	Demolish-Long Term	Relocate to Industrial Area and west of Foster Road
1947	DISPATCH OFFICE	197	SQFT	9	FT	1	1963 Q-3	OFFICE	197	Demolish-Long Term	Relocate to Industrial Area and west of Foster Road
1948	VEH GAS STATION	125	SQFT	15	FT	1	1963	INDUSTRIAL	125	Demolish-Long Term	Relocate to Industrial Area and west of Foster Road
1949	VEH MAINT SHOP, ORGN	11,394	SQFT	33	FT	2	1963	INDUSTRIAL	22,787	Remain	
1950	VEH MAINT SHOP, ORGN	5,089	SQFT	16	FT	1	1963 Q 4	INDUSTRIAL	5,089	Renovation	
1985	WASH PLATFORM, LW PRESSURE	1,017	SQFT	22	FT	1	1982	UTILITY	1,017	Remain	
2101	ADMIN & SUPPLY BLDG (3 CO)	15,238	SQFT	23.5	FT	1	1975 Q-2	OFFICE	15,238	Demolish-Long Term	Relocate to new Troop Village in 1400 Area
2102	MCREE BARRACKS COMPLEX	10,105	SQFT	40	FT	3	1975 Q-3	TROOPS	30,316	Demolish-Long Term	Relocate to new Troop Village in 1400 Area
2103	MCREE BARRACKS COMPLEX	10,067	SQFT	40	FT	3	1975 Q-3	TROOPS	30,201	Demolish-Long Term	Relocate to new Troop Village in 1400 Area
2104	MCREE BARRACKS COMPLEX	10,032	SQFT	40	FT	3	1975 Q-3	TROOPS	30,097	Demolish-Long Term	Relocate to new Troop Village in 1400 Area
2105	MCREE BARRACKS COMPLEX	15,034	SQFT	23	FT	1	0 Q-2	TROOPS	15,034	Demolish-Long Term	Relocate to new Troop Village in 1400 Area
2109	MCREE BARRACKS COMPLEX	10,058	SQFT	40	FT	3	1975 Q-3	TROOPS	30,174	Demolish-Long Term	Relocate to new Troop Village in 1400 Area
2110	MCREE BARRACKS COMPLEX	13,411	SQFT	40	FT	3	1975 Q-3	TROOPS	40,233	Demolish-Long Term	Relocate to new Troop Village in 1400 Area
2111	MCREE BARRACKS COMPLEX	6,692	SQFT	40	FT	3	1975 Q-3	TROOPS	20,075	Demolish-Long Term	Relocate to new Troop Village in 1400 Area
2113	MP FACILITY	19,995	SQFT	16.5	FT	1	0 Q-1	OFFICE	19,995	Demolish-Long Term	Relocate to new Troop Village in 1400 Area
2115	GENERAL INSTRUCTION FACILITY	4,015	SQFT	17.5	FT	1	1975 Q-1	OFFICE	4,015	Demolish-Long Term	Relocate to new Troop Village in 1400 Area
2116	GRAVES PHYSICAL FITNESS CENTER	28,103	SQFT	52	FT	1	0 Q-2	CIVIC	28,103	Remain	Potential long term expansion
2117	CENTRAL ENERGY PLANT	3,412	SQFT	21.5	FT	1	1975 Q-1	UTILITY	3,412	Demolish-Long Term	Relocate within Lower North Post
2118	CO HQ BUILDING	6,867	SQFT	19.5	FT	1	1975 Q-1	OFFICE	6,867	Demolish-Long Term	Relocate within Lower North Post
2119	NORTH POST FIRE STATION	8,296	SQFT	33	FT	1	0 Q-1	CIVIC	8,296	Renovation	
2120	WOOD THEATER	9,684	SQFT	32	FT	1	1975 Q-2	CIVIC	9,684	Renovation	
2124	MP HEADQUARTERS	9,770	SQFT	14	FT	1	0 Q-1	OFFICE	9,770	Remain	Potential long term expansion
2290	RADIO TRANSMITTER	263	SQFT	12	FT	1	1942 Q-1	UTILITY	263	Remain	
2291	ARMY RESERVE CENTER	46,567	SQFT	35	FT	1	0 Q-1	OFFICE	46,567	Remain	Potential long term expansion
2292	ARMY RESERVE AMSA/ECS	14,051	SQFT	32	FT	1	0 Q-1	OFFICE	14,051	Demolish-Long Term	
2293	ORGANIZATION STORAGE BUILDING	3,167	SQFT	14.5	FT	1	0 Q-1	OFFICE	3,167	Remain	
	TOTALS	421,175	SQFT						551,000		
	NEAR TERM DEMOLITION								73,000	SQFT	
	LONG TERM DEMOLITION								287,000	SQFT	
	RENOVATION								24,000	SQFT	
	REMAIN								194,000	SQFT	
	EXISTING USES										
	OFFICE								183,000	SQFT	
	RETAIL								0	SQFT	
	CIVIC								94,000	SQFT	
	UTILITY								6,000	SQFT	
	INDUSTRIAL								35,000	SQFT	

Appendices MWR Framework Plan (2030)



*Footnote: Fort Belvoir overpass is one of several possible transportation improvements described in the transportation section in the URC. Implementation of the overpass would result in loss of one field. A replacement soccer field is possible with upgrades to the Pullen Field Track area.



MWR Framework Plan (2030)

Fort Belvoir / EPG
Fort Belvoir, Virginia

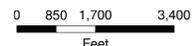


Table 9. Existing Low North Post

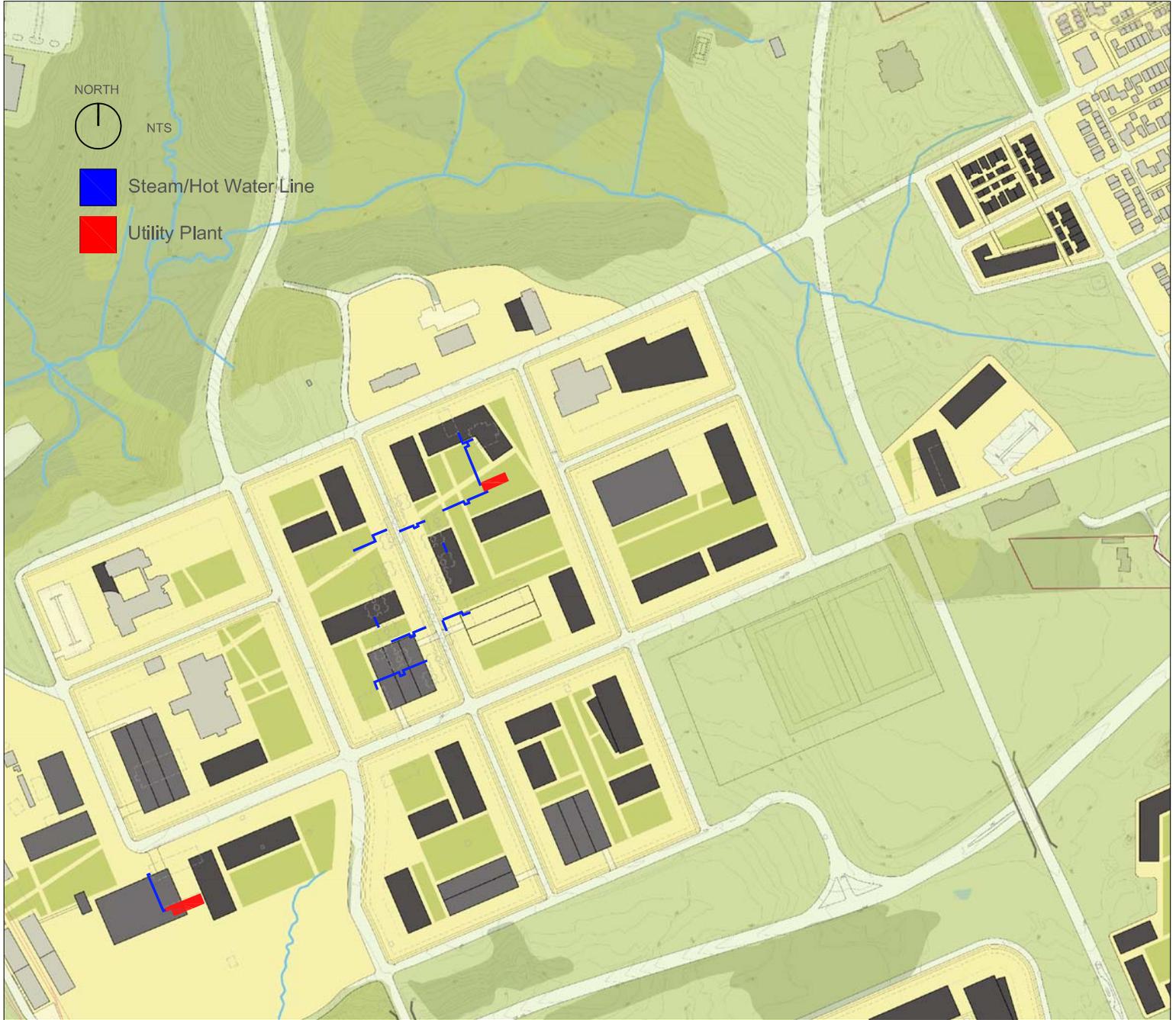
Central Energy Plant	Type	Capacity	Quantity	Equipment	Owner	Year	SF Served
2117	Hot Water	329 BHP	2	Trane PBAL 3F-5			245,056
2117	Chiller	300 Ton	2	Trane RTHC1C2F0H0G1 L4G1LFVQU00 PACKAGE Screw Chiller	Pepco Government services in 2000 as part of NCR ESPC - ECM 1	2000	245,056

Table 10. Central Energy Plant for Individual Building of Low North Post ADP

Low North Post	Total Gross Square Footage	Building ID	Use	Gross Square Footage	Action
Central Energy Plant (CEP) Hot Water/Chiller (2117)	245,656	2101	OFFICE	15,238	Demolish-Long
		2102	TROOPS	30,316	Demolish-Long Term
		2103	TROOPS	30,201	Demolish-Long Term
		2104	TROOPS	30,097	Demolish-Long Term
		2105	TROOPS	15,034	Demolish-Long Term
		2109	TROOPS	30,174	Demolish-Long Term
		2110	TROOPS	40,233	Demolish-Long Term
		2111	TROOPS	20,075	Demolish-Long Term
		2113	OFFICE	19,995	Demolish-Long Term
		2115	OFFICE	4,015	Demolish-Long Term
		2117	UTILITY	3,412	Demolish-Long Term
		2118	OFFICE	6,867	Demolish-Long Term
Independent Building	307,643	1801	CIVIC	19,842	Remain
		1809	OFFICE	26,320	Demolish-Near Term
		1810	CIVIC	27,138	Demolish-Long Term
		1812	OFFICE	12,982	Demolish-Long Term
		1822	TROOPS	39,210	Demolish-Near Term
		1832	UTILITY	193	Demolish-Near Term
		1839	OFFICE	23,669	Remain
		1905	INDUSTRIAL	394	Demolish-Near Term
		1906	INDUSTRIAL	5,372	Demolish-Near Term
		1913	UTILITY	469	Demolish-Near Term
		1943	INDUSTRIAL	264	Demolish-Near Term
		1946	INDUSTRIAL	159	Demolish-Long Term
		1947	OFFICE	197	Demolish-Long Term
		1948	INDUSTRIAL	125	Demolish-Long Term
1949	INDUSTRIAL	22,787	Remain		

	1950	INDUSTRIAL	5,089	<i>Renovation</i>
	1985	UTILITY	1,017	Remain
	2116	CIVIC	28,103	Remain
	2119	CIVIC	8,296	<i>Renovation</i>
	2120	CIVIC	9,684	<i>Renovation</i>
	2124	OFFICE	9,770	Remain
	2290	UTILITY	263	Remain
	2291	OFFICE	46,567	Remain
	2292	OFFICE	14,051	Remain
	2293	OFFICE	3,167	Remain
	2430	CIVIC	2,516	Remain

Potential Lower North Post



Potential Lower North Post

Long Range System

The existing chillers are part of a PEPCO NCR ESPC program and were installed in 2000. There is likely a financial penalty to be incurred if this equipment and/or associated buildings are demolished prior to the completion and performance of the existing contract.

For the new development the existing chillers could serve approximately 180,000 square feet of new commercial office space while the existing boilers could serve approximately 500-600,000 square feet. Both capacities do not allow for any type of redundancy and reflect full capacity of the existing installed equipment. The age of the boilers is not known at this time.

The new development within the Lower North Post includes in excess of 1,600,000 square feet. While the existing chiller equipment has a lot of value in terms of useful life, the capacity cannot provide services to the entire potential built-up area.

Options for future renovation work:

1. Demolish existing energy plant building upon the completion of demolition of the associated buildings currently serviced by the chillers and boilers. Consider relocating the existing chillers to one of the new planned buildings in coordination with PEPCO as part of a potential renegotiation of the ESPC program currently in place.
2. Consideration shall be given to providing a central utility plant for future development given the compact nature of this development. The initial and life cycle cost analysis should be performed based upon future construction scope and schedule to determine the appropriate level of central plant. If found to be cost effective, central energy plant could be located within a new planned building structure or be installed as an independent building structure. It is recommended that the distribution piping from any future central plant operations be placed within an accessible tunnel or trench system to allow the piping systems to be repaired/replaced in the future in a more cost effective way.

Appendices

LEED ND Checklist



LEED for Neighborhood Development Pilot Project Checklist

Project Name:

Primary Contact:

Instructions: In the Points Earned column, enter "Yes," "No," or "Maybe" for prerequisites and the expected number of points earned for credits. For prerequisites with more than one compliance path, enter the compliance path option # in column E, in the row under the prerequisite's name.

Points Earned

15	Smart Location & Linkage	30 Points Possible
-----------	-------------------------------------	---------------------------

Yes	Prereq 1	Smart Location	Required
1		Option #:	
Yes	Prereq 2	Proximity to Water and Wastewater Infrastructure	Required
1		Option #:	
Yes	Prereq 3	Imperiled Species and Ecological Communities	Required
2		Option #:	
Yes	Prereq 4	Wetland and Water Body Conservation	Required
3		Option #:	
Yes	Prereq 5	Farmland Conservation	Required
2		Option #:	
Yes	Prereq 6	Floodplain Avoidance	Required
2		Option #:	
2	Credit 1	Brownfield Redevelopment	2
1	Credit 2	High Priority Brownfields Redevelopment	1
6	Credit 3	Preferred Location	10
1	Credit 4	Reduced Automobile Dependence	8
1	Credit 5	Bicycle Network	1
	Credit 6	Housing and Jobs Proximity	3
	Credit 7	School Proximity	1
1	Credit 8	Steep Slope Protection	1
1	Credit 9	Site Design for Habitat or Wetlands Conservation	1
1	Credit 10	Restoration of Habitat or Wetlands	1
1	Credit 11	Conservation Management of Habitat or Wetlands	1

18	Neighborhood Pattern & Design	39 Points Possible
-----------	--	---------------------------

Maybe	Prereq 1	Open Community	Required
Yes	Prereq 2	Compact Development	Required
2	Credit 1	Compact Development	7
2	Credit 2	Diversity of Uses	4
3	Credit 3	Diversity of Housing Types	3
2	Credit 4	Affordable Rental Housing	2
	Credit 5	Affordable For-Sale Housing	2
1	Credit 6	Reduced Parking Footprint	2
4	Credit 7	Walkable Streets	8
	Credit 8	Street Network	2
	Credit 9	Transit Facilities	1
	Credit 10	Transportation Demand Management	2
1	Credit 11	Access to Surrounding Vicinity	1
1	Credit 12	Access to Public Spaces	1
	Credit 13	Access to Active Public Spaces	1
1	Credit 14	Universal Accessibility	1
1	Credit 15	Community Outreach and Involvement	1
	Credit 16	Local Food Production	1

Appendices

22		Green Construction & Technology	31 Points Possible
Yes	Prereq 1	Construction Activity Pollution Prevention	Required
2	Credit 1	LEED Certified Green Buildings	3
1	Credit 2	Energy Efficiency in Buildings	3
3	Credit 3	Reduced Water Use	3
1	Credit 4	Building Reuse and Adaptive Reuse	2
1	Credit 5	Reuse of Historic Buildings	1
1	Credit 6	Minimize Site Disturbance through Site Design	1
1	Credit 7	Minimize Site Disturbance during Construction	1
1	Credit 8	Contaminant Reduction in Brownfields Remediation	1
5	Credit 9	Stormwater Management	5
	Credit 10	Heat Island Reduction	1
	Credit 11	Solar Orientation	1
	Credit 12	On-Site Energy Generation	1
1	Credit 13	On-Site Renewable Energy Sources	1
	Credit 14	District Heating & Cooling	1
	Credit 15	Infrastructure Energy Efficiency	1
1	Credit 16	Wastewater Management	1
1	Credit 17	Recycled Content for Infrastructure	1
1	Credit 18	Construction Waste Management	1
1	Credit 19	Comprehensive Waste Management	1
1	Credit 20	Light Pollution Reduction	1
1		Innovation & Design Process	6 Points
	Credit 1.1	Innovation in Design: Provide Specific Title	1
	Credit 1.2	Innovation in Design: Provide Specific Title	1
	Credit 1.3	Innovation in Design: Provide Specific Title	1
	Credit 1.4	Innovation in Design: Provide Specific Title	1
	Credit 1.5	Innovation in Design: Provide Specific Title	1
1	Credit 2	LEED® Accredited Professional	1
56		Project Totals (pre-certification estimates)	106 Points
Certified: 40-49 points, Silver: 50-59 points, Gold: 60-79 points, Platinum: 80-106 points			

Appendices

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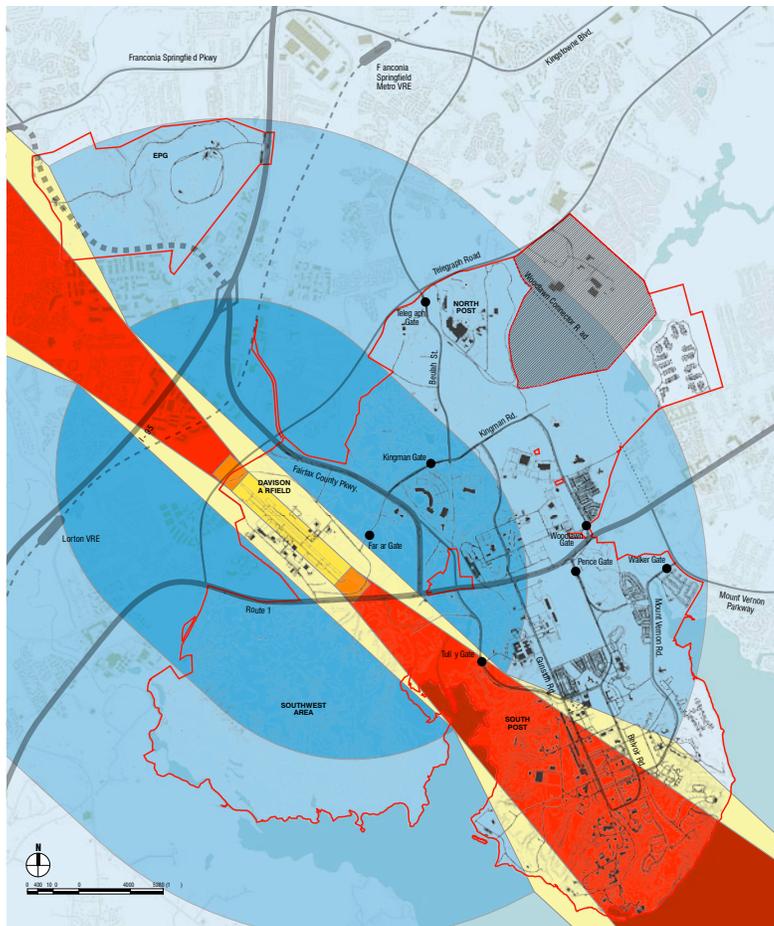
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Figure 2.43- Airfield Constraints Map



Airfield Facilities

Davison Army Airfield

Davison Army Airfield (DAA) is an operational and training facility. DAA accommodates five operational flying units within the Washington/National Capital Region Military District and a training unit of the District of Columbia Air National Guard. The five operational flying units are:

- 12th Aviation Battalion - Rotary
- Operational Support Airlift Agency (OSAA/OSACOM) - Fixed wing
- DC Air National Guard - Rotary
- Aviation Night Vision Lab - Rotary/ Fixed wing
- Civil Air Patrol - Fixed wing

The operational units are primarily responsible for supporting Post-related missions and operations. Currently DAA supports training and operations by both helicopter and fixed wing aircraft. DAA Air Traffic Services Staff's monthly activity records show that there were a total of 50,181 fixed wing and helicopter operations from April 2005 to April 2006. Helicopter operations account for approximately 60 percent of the total annual flight operations.

DAA is required to comply with guidelines and regulations to meet a Class A airfield as outlined in the Unified Facilities Criteria (UFC) 203-260-01, Airfield and Heliport Planning and Design. The maximum aircraft size which can be safely accommodated at DAA is UC-35 (Citation 560). Operations at the DAA accommodate a helicopter fleet ranging from small OH-6s to large UH-60 Blackhawks and CH-53 Stallions, while fixed wing aircraft operations range from small Cessna 182s to large C-130 Hercules aircraft. Although C-130 operations exceed the design weights and pavement geometry parameters of this Class A regulated airfield, they have occurred frequently and resulted in the rapid deterioration of the airfield pavements. Additionally, the existing facility layout often results in the interaction of helicopter and fixed wing aircraft operations, which reduces the operational safety and capacity of the airfield.

Figure 2.43 maps the imaginary surfaces associated with the runway at DAA. No manmade structures or natural features are allowed on the primary surface and clear zones. Height restrictions are imposed on the development and landscape below the rest of the surfaces. The DAA runway elevation is +74 ft MSL. The associated imaginary surfaces are calculated based on this level.

Maximum allowed height for development on any given parcel is determined by the topography and the imaginary surface the parcel falls under. Figure 2.44 depicts the maximum allowed height for development surrounding the airfield.

Figure 2.44- Maximum Building Heights based on Airfield Imaginary Surfaces Restrictions

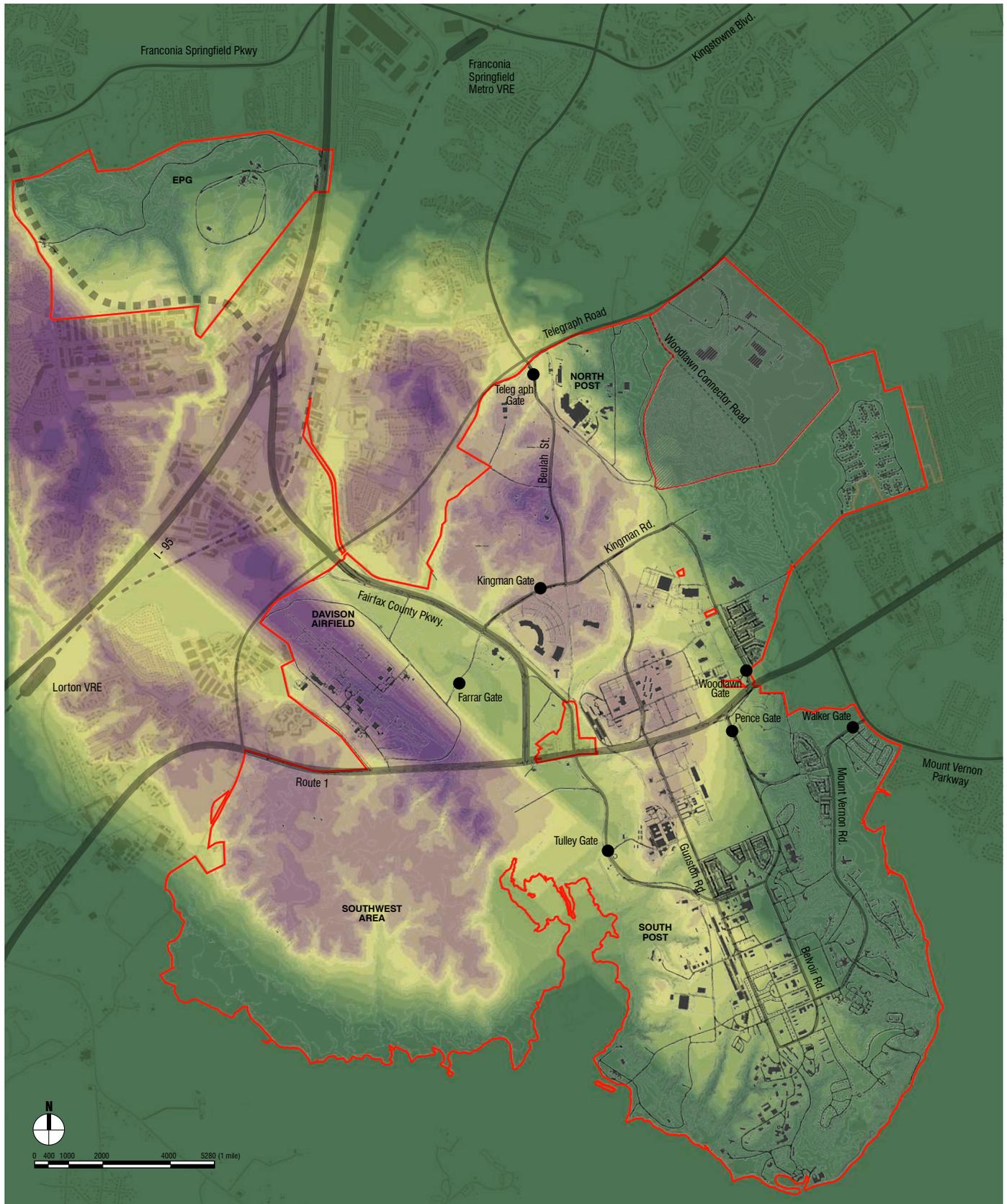


Table 2.21 - DAA Imaginary Surfaces, Existing On-Post Obstructions and Impacts on Development

Imaginary Surface	Definition	Development Impacts and Existing Obstructions*
Primary Surface	A surface longitudinally centered on the runway and extending 200 feet beyond each runway end. The width of the primary surfaces varies depending on the class of runway and coincides with the lateral clearance distance.	No manmade or natural features are allowed. Obstructions include building nos. 3136, 3137, 3138, 3140, 3141, 3230, 3231, 3233, 3234, 3237, and 3239.
Clear Zone (graded area only)	A surface located on the ground at the runway end and symmetrical about the runway centerline extended.	No manmade or natural features are allowed. No obstructions identified.
Approach-Departure Surface	An inclined plane arranged symmetrically about the extended runway centerline. The beginning of the inclined plane starts at the end of the primary surface and the elevation of the centerline at the runway end. The surface flares outward and upward from these points at a uniform slope.	No structure must puncture this surface. No obstructions identified.
Inner Horizontal Surface	An imaginary plane that is oval in shape and is located at a height of 150 feet above the established airfield elevation.	No structure must puncture this surface. Obstructions include building no. 2462.
Conical Surface	An imaginary surface that extends from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet and a height of 500 feet above the established airfield elevation.	No structure must puncture this surface. Obstructions include building nos. 2901, 2902, 2903, 2905, and 2907.
Outer Horizontal Surface	An imaginary plane located at a height of 500 feet above the established airfield elevation, extending outward from the edge of the conical surface a horizontal distance of 30,000 feet.	No structure must puncture this surface. No obstructions identified.
Transitional Surface	An imaginary surface that extends outward and upward at right angles to the runway centerline at a slope of 7 to 1 and connects the primary and approach departure surfaces to the inner horizontal, conical and outer horizontal surfaces.	No structure must puncture this surface. No obstructions identified.

Note: * Existing Obstructions were calculated based on Fort Belvoir GIS data provided. Field investigations are required to verify these conclusions.

Planning Considerations

Current and future facilities should not penetrate the imaginary surfaces which are detailed in Figure 2.43, so that DAA may operate at its full capacity. Table 2.21 lists the existing facilities which conflict with the imaginary surfaces. While height restrictions apply to the entire Post and EPG, restrictions of 100 ft or lower only apply to parts of the North Post and Southwest area (Figure 2.44). Severe restrictions of 40 ft or lower apply to small areas within the North Post Golf Course and the eastern portion of the Southwest area. It is extremely important that existing obstructions are removed and potential future obstructions are prohibited. This will help DAA regain lost operational capacity and protect against further loss of overall airfield functionality.

DAA plays a key role in the National Emergency Response plan. In the event of a National Emergency, Andrews Air Force Base (AFB) will be used to launch fighter aircraft and the Presidential Command Control Berth. Andrews AFB will be locked down to all other operations. DAA will provide for simultaneous operations, such as evacuation of the Secretary of Defense and other key personnel. DAA's assets will be used primarily within the DC area Beltway. During a National Emergency, DAA will be in "lockdown", restricting personnel from leaving or accessing the airfield until the Emergency has passed. These National Emergency Response plans must be considered during land-use development planning.



Airfield Facilities

Appendices

List of Figures

Figure 1–1	The Setting: Lower North Post	3
Figure 1–2	Reshaping Fort Belvoir: Existing Lower North Post Area	4
Figure 1–3	Reshaping Fort Belvoir: Long Term Proposal for the Lower North Post	5
Figure 2–1	Land Use Map 2030	6
Figure 2–2	The Setting: Lower North Post Today (2007)	7
Figure 3–1	Aerial Today (2007)	9
Figure 3–2	Buildable Areas Overlay Map	17
Figure 3–3	Water Resources	18
Figure 3–4	Sensitive Habitat	19
Figure 3–5	Operational Constraints	20
Figure 3–6	Cultural Resources	21
Figure 3–7	Installation Status Report	23
Figure 3–8	Existing Road & Pedestrian Framework	25
Figure 4–1	Long-Term Program Capacity	27
Figure 5–1	Lower North Post: Creating Important Connections	28
Figure 5–2	Lower North Post Planning Principles	31
Figure 6–1	Framework Plan Alternatives	33
Figure 6–2	Lower North Post Area Block Framework	34
Figure 6–3	Preferred Framework	35
Figure 7–1	Long Term Proposal for the Lower North Post	37
Figure 7–2	Building Development Strategy for the Lower North Post	39
Figure 7–3	Building Siting	41
Figure 7–4	Infrastructure Strategies	49
Figure 7–5	Infrastructure Strategies	50
Figure 7–6	Infrastructure Strategies	51
Figure 7–7	Transportation Strategy - All Transportation Improvements by 2030	53
Figure 8–1	Future mixed-use Lower North Post as Recreation and Office	55
Figure 8–2	Near-Term Development	56
Figure 8–3	Long-Term Development Strategy	57

List of Tables

Table 3–1	Development Constraints Located in the Study Area	11
Table 3–2	SWMUs in the LNP	13
Table 3–3	Hazardous Waste Management Units on LNP	13
Table 3–4	Petroleum Storage Areas (ACTIVE) in the LNP	14
Table 3–5	Petroleum Storage Areas (INACTIVE) in the LNP	14
Table 3–6	Petroleum Storage Areas (ACTIVE) in the LNP	15
Table 3–7	ISR Rating Definitions	23
Table 4–1	Near Term Projects	26
Table 7–1	Proposed Lower North Post Building Development Summary	38