

# Industrial Area Area Development Plan

February 2008





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**Prepared by:**





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## 1.1 Purpose

Area Development Plans (ADPs), by definition, address the site planning of a specific area of an installation - unified by function, identity, 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 Base Realignment and Closure Act of 2005 (BRAC 2005) has created an opportunity to make a lasting impact on the development pattern of Fort Belvoir. The proposed increase in the installation population and mission has necessitated an increase in the density of development on the Main Post. This requires consolidation of facilities for the most efficient use of available buildable land to support near-term (BRAC) and long-range projects.

The focus of this ADP is the development of a campus within the Industrial Area on the South Post of Fort Belvoir - one that can accommodate a wide range of support facilities, including warehouses, outdoor motor pools, storage yards, administrative offices, “flex/tech” spaces (see Figure 1.1), and community-oriented services. Presently, the Industrial Area has a wide range of uses, including: the Prime Power School, Veterinary Clinic, and kennels for working dogs. Currently, there are eight short-term or 1391 projects that lie within this area (see Table 4.1). Three alternative strategies for implementing both the short-term and long-term projects are identified in chapter 6. The preferred alternative, in Chapter 8, combines elements of these three plans. Recommendations

are documented in this report, and presented graphically in the final ADP, reflecting the proposed uses, roads, and infrastructure needed to support new development.

This Industrial ADP will provide planning guidance for:

- Building and street locations
- Desired building sizes and footprints for multiple users and functions
- Siting within the study area of all “1391” projects - identified in the Short Range Component (SRC)
- Suggested long-term projects and areas reserved for future development
- Complementary uses along Gunston Road - adjacent to existing residences and planned future uses (described in the Town Center ADP)
- Building setbacks and buffers to adjacent uses
- Parking, truck loading, and outdoor storage areas
- Typical street sections and site access
- Environmental mitigation strategies (stormwater management, noise, lighting impacts, etc.)

The ADP will also illustrate concepts for implementing key plan features, such as standard minimums for truck turn-arounds, loading areas, and screening. Whenever possible, the ADP also identifies specific development priorities that correlate with SRC facility programming, Military Construction (MILCON), and other project funding documentation.

## 1.2 Process

The ADP process is inherently flexible. While each ADP has its own unique focus, eight key steps guide its development.

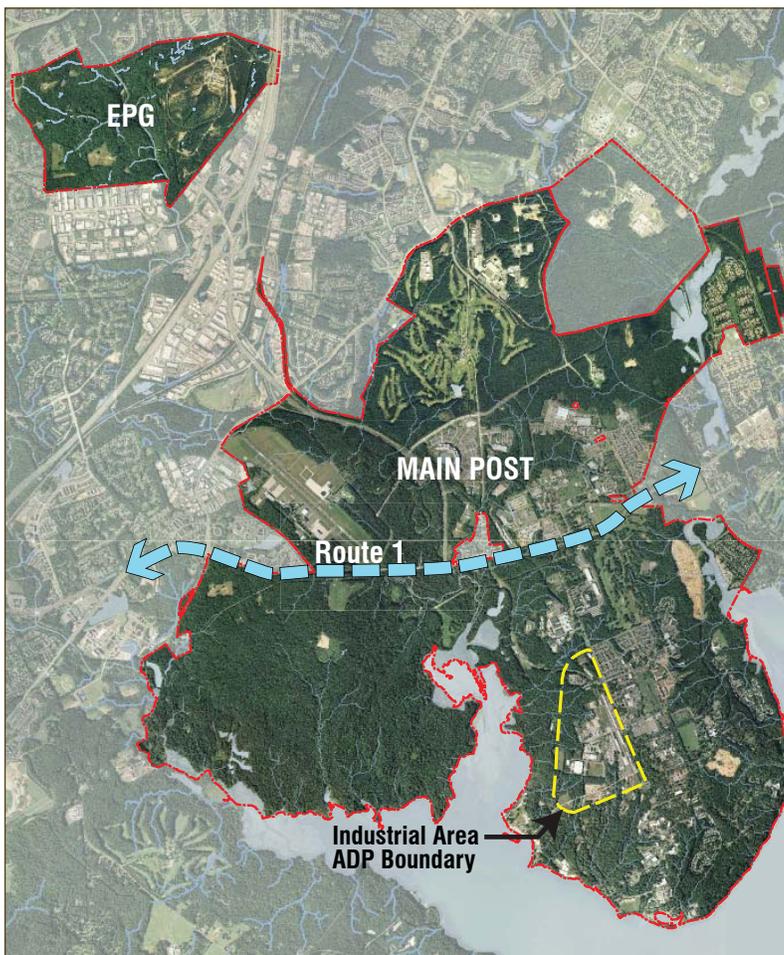
- **STEP 1: Set goals.** These direct ADP development (see Chapters 1, 5, and 6).
- **STEP 2: Define area boundary.** Wherever possible, this utilizes existing roads, fences, and other physical features (see Chapter 2).
- **STEP 3: Define program requirements.** “End-state” program requirements driving the ADP are clearly defined. These include specific projects, funding sources, scope, and timing. The program proponent, Master Planning staff, garrison commander, and various user groups all provide input (see Chapter 4).
- **STEP 4: Collect and analyze data.** Data from many sources is reviewed prior to ADP development to better identify issues and gain a greater understanding of the site (see Chapter 3).

- **STEP 5: Develop alternative plans.**

Before arriving at the preferred plan, several alternatives are explored in order to (see Chapter 6):

- Ensure all implications of a siting decision are understood
  - Facilitate NEPA documentation at required levels for the ADP/individual projects
  - Illustrate design ideas and strategies
- **STEP 6: Evaluate alternative plans.** With input from garrison planners, command personnel, and other interested parties, a list of pros and cons is compiled for each alternative, and then compared. From this, a preferred plan is selected for further refinement (see Chapter 7).
  - **STEP 7: Develop final plan.** The best alternatives from Step 6 are incorporated into a final plan (see Chapter 8).
  - **STEP 8: Develop implementation plan.** This includes (see Chapter 9):
    - Listing of area projects
    - Identification of funding sources for each project
    - Phasing plan

Figure 1.1 - Industrial ADP Boundary



## 1.3 Vision

The vision of the Industrial ADP is to establish an efficient, flexible campus plan that accommodates a wide range of building uses and outdoor operational needs, consistent with the Master Plan established in the LRC.

Efficient site use can be attained by consolidating existing industrial areas and developing a more compact layout for buildings, streets, and support facilities. Greater efficiency is also possible through the logical integration of transportation patterns for all forms of future traffic demand - vehicular cars and trucks, pedestrians, bikes, private transit systems (i.e. tenant specific shuttle buses) and public transportation systems.

Development flexibility can be enhanced by establishing standard street block dimension that will support a variety of industrial building sizes and footprints. Although a wide range of facilities is planned for the Industrial Area, the ADP and IDG together create a visual coherent identity for the area.

Fort Belvoir places a high priority on its environment. Environmentally sensitive development planning is achieved through sustainable design principals, such as: mitigation and management strategies for solid waste, stormwater detention, noise, erosion control, and energy efficiency. Recommendations for establishing a Leadership in Energy and Environmental Design (LEED) Neighborhood Development System are described in Chapter 5.



*Aerial photo of (from left to right) Theote Road, the Recreation Vehicle storage lot, and the World War I and II warehouses.*



Figure 1.2 - A goal of the Industrial ADP is to create warehouses which support multiple uses and tenants.

Source: <http://www.focal-plane.com/realestate.html> viewed on October 9, 2007

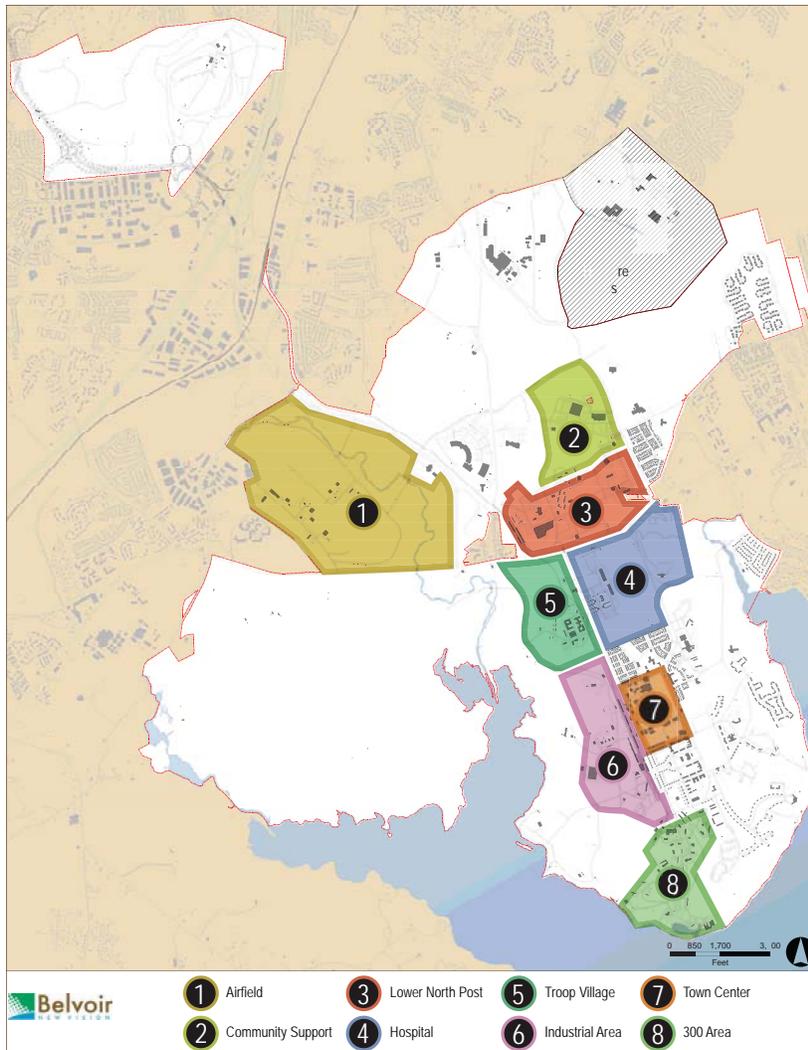
# Industrial Setting

### 2.1 Location

The industrial sub area is one of eight sub-areas within the Main Post presently undergoing ADPs in support of the overall master plan for Fort Belvoir. The new Troop Village and Health Campus lie north of the Industrial Area with the Town Center to the east and the 300 area to the south. Future uses that will be established within these sub-areas due to planned "1391" projects or BRAC required will result in the migration of industrial and other related uses to the Industrial Area (see Figure 2.1).

The Industrial ADP study area encompasses approximately 255 acres and is generally triangular in shape (with a narrow north and a wider south). Just under half of the site is paved; the remainder is open space. The study area includes all the contiguous developable area west of Gunston Road that lies south of 9th Street and north of 21st Street. This area is bounded by the conservation area (as designated on the GIS base maps) and other naturally constrained areas to the west and south.

Figure 2.1 - Sub-Area Map



## 2.2 Site Context

In the west and south, mature woodlands, Resource Protection Areas (RPAs), conservation areas and wildlife management areas cover a significant portion of the study area. These natural areas are non-buildable. In the northern end of the site there is an explosive arc related to the ammunition bunkers. Also impacting the site are: a former small arms training range and Solid Waste Management Units (SWMUs) that include two landfills, Petroleum Storage Areas (PSAs), and Petroleum Release Sites (PRs).

### Site Classification

The study area is classified in the LRC as an Industrial land use cluster. Facilities permitted within this cluster include those for: fuel dispensing, waterfront operations, maintenance and production, Research, Development, Test, and Evaluation (RDT&E) buildings, storage, medical laboratories, veterinary services, fire and rescue, confinement, police/MP stations, exchange storage and support, and railroad tracks. For a complete listing of all uses allowed see Appendix A in the January 2008 LRC.

Figure 2.2 - Existing industrial setting (2007 aerial)



## Existing Facilities

Existing facilities in the study area are generally industrial in nature, and are operated privately or by the Department of Defense (DoD) (see Figure 3.7). There is a heavy concentration of maintenance functions, including a vehicle maintenance shop, in the 700-area. (Just beyond the study area is a transportation motor pool on 16th street.) The 700-area is also the largest supply/storage area on South Post, with over 40 warehouses, loading areas, special storage, and open storage areas. Other existing facilities within the study area include: a refueling station, abandoned railroad line, veterinary clinic, kennel facility, recreational vehicle (RV) storage lot, some community related programs, and administration facilities. Several structures are considered historically significant, including some wooden storage buildings dating from World War I and the former railroad engine storage/maintenance building (Building 707 constructed in 1935), currently used for vehicle maintenance.

## Site Access

The study area is most accessible through Tulley Gate, the closest entrance, which also provides easy access to U.S. Route 1. From this gate, vehicular traffic would travel along Pohick Road and turn into the study area at the intersection of Pohick and Theote Roads.

There are a number of existing roads within the industrial area that provide access to existing facilities. Some carry a greater degree to traffic such as Theote Road, and others provide access to only a few buildings such as Tracy Loop. Major roadways within in the study area include:

- Theote Road roughly running through the center of the developable area
- Gunston Road forming the eastern edge of the study area
- 16th Street bisecting the study area
- Warren Road running close to its southern edge
- A right-of-way along the abandoned railroad tracks running parallel to Gunston Road through the entire study area and connecting to the existing Metro/Virginia Rail Express (VRE) station at Franconia/Springfield.



*Recreational Vehicle Storage Lot to be relocated*



*Theote Road - See Chapter 8 on future widening*



*Old Rail Road Alignment*



*Existing DPW HQ to be relocated in the industrial area*



*Gerber Village is adjacent to the Industrial ADP limits (view when facing North on Gunston Road)*

## 2.3 Long Range Land Uses

Within the study area, the majority of buildable land will be developed as a consolidated campus for Industrial activities to support existing and new maintenance, supply, motor pool, and outdoor storage functions. Existing facilities in good condition will be retained or renovated. New facilities will be constructed to meet future mission requirements for this area. Some facilities will be relocated to here from Post areas now designated for new uses under the LRC, including those from the 1400-area at Jackson Loop. More information on the specific activities designated for relocation to the Industrial Area can be found in ADPs for Lower North Post, New Troop Village, and Town Center sub areas.

The LRC also proposes reserving a part of the study area for low-density residential development. This area will serve as an extension of Gerber Village, with an integrated open space designed to accommodate a riparian buffer and other constrained areas. This open space will provide a necessary buffer between residential and industrial uses. The land area planned for residential uses are depicted in the Alternate Plans (see Chapter 6) and allows approximately 50 homes as generally reflected in the Master Plan Framework.

# Existing Site Conditions

## 3

### CHAPTER

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

## 3.1 Development Constraints

Discussed here are the natural, cultural, and operational resources and constraints of the ADP study area. Figure 3.1 shows a composite of constraints.

On Fort Belvoir, more than 65% of the land has development constraints. Within the study area, however, the majority of its plateaus are developable, having been already disturbed by prior development. Compared to the Post as a whole, there are relatively few major constraints within the developable land area. Mitigation measures for each of these constraints are identified in this section. Problem areas that are identified in Tables 3.1 to 3.10 should be avoided whenever possible to minimize risk and development costs.

The methodology used to evaluate constraints involved populating a constraints matrix. This was accomplished utilizing a GIS-based tool that calculates the acreage or number of each constraint within the footprint of the study area. Within the GIS mapped developable areas, there are operational constraints that include such items as Fuel Storage Tanks and Solid Waste Management Units that may require cleanup before development of area.

This methodology identified the following constraints that could affect development within the ADP study area limits:

- Resource Protection Areas (RPAs)
- Wetlands
- Riparian Buffers
- Fauna Special Species
- Conservation Areas
- Wildlife Management Areas
- Steep Slopes (> 15%)
- Airfield Building Height Restriction
- Former and Active Training Range
- Solid Waste Management Units
- Petroleum Storage Areas
- Petroleum Release Sites
- Historic Buildings
- Historic District
- Air Quality Permits
- Construction Permits

The constraint and the extent of these impacts are summarized in Figure 3.1 and Tables 3.1, 3.2, and 3.7.

Figure 3.1 - Composite Resources Map (See Figure 3.4 for building ISR quality ratings)



\*Note: Only active fuel tanks are shown.

## Natural Resources

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 (see Figure 3.2).

### **Resource Protection Areas (RPAs)**

The ADP parcel includes 33.5 acres of RPAs along the western boundary (see Figure 3.2). Development in these areas should be avoided. Any proposed road and bridge corridor crossing 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 perennality. Because the affected RPAs are near the headwaters of streams, a perennality 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 ADP parcel includes 2.2 acres of wetlands (see Figure 3.2). The wetlands are located in small areas along the western and southern boundary of the ADP parcel.

The wetlands 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 ADP parcel includes 41.3 acres of riparian areas (see Figure 3.2), which generally overlap the RPAs along drainages that flow west and empty into Accotink Bay.

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 the design.



*The industrial study area is adjacent to the Accotink Bay Wildlife Refuge Area*

### **Special Species Areas**

The ADP parcel includes 16.4 acres of sensitive fauna habitat of the Northern Virginia well amphipod habitat located at the southern limit of the ADP area (see Figure 3.2). Other special species areas exist around the ADP Parcel, including bald eagle foraging area to the west, and rare plant communities to the north. A negligible impact on these resources would be expected.

### **Conservation Area**

The ADP parcel include 94.6 acres of conservation areas in the western portion of the proposed development area (see Figure 3.2). This area is included within the 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.

### **Wildlife Refuge**

The ADP parcel includes 84.1 acres of wildlife management areas (see Figure 3.2) in the western portion of the proposed development area. The Accotink Bay Wildlife Refuge (ABWR) was established in 1979 and covers 1,360 acres of freshwater tidal marsh and climax hardwood forest adjacent to Accotink Bay. The ABWR areas are habitat for several rare animals, plants, plant communities, and habitats, including bald eagle, peregrine falcon, and wood turtle and includes all of the resource protection areas along Dogue Creek main stem in the North Post. The refuge also overlaps with other natural constraints such as some PIF priority bird species habitat and the RPAs. Development cannot occur in the refuge and these areas are required to be avoided.

### **Steep Slopes (> 15%)**

The ADP parcel includes 24.2 acres of steep slopes, which are mostly located along unnamed tributaries of Accotink Bay in the western portion of the IDP parcel. A small steep slope area is also located at the southern extent of the development area (see Figure 3.2). 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.

Table 3.1 - Natural Development Constraints Located in the Study Area

Resource	Size or Number	Units	Comment/Description
RPAs	33.5	Acres	Avoid where possible. Coordination with Fairfax County and VDEQ required. Chesapeake Bay Program.
Wetlands	2.2	Acres	Avoid where possible. Permit may be required if impacting wetlands. Costs for wetland banking. Jurisdictional review by the USACE and VDEQ required.
Riparian Buffers	41.3	Acres	Implement Low-Impact Development (LID) in these areas, if avoiding completely is not possible. Streams, wetlands, and RPAs need to be field verified to establish limits of these areas before development on adjacent property.
Special Species Areas	16.4	Acres	Negligible impact on the habitat of the Northern Virginia well amphipod and bald eagle foraging area would be expected.
Conservation Areas	94.6	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.
Wildlife Management Areas	84.1	Acres	Avoid. Development cannot occur in The Accotink Bay Wildlife Refuge.
Steep Slopes > 15%	24.2	Acres	Engineering practices that allow for construction on steep slopes (> 15%) may be permitted, if the unconstrained land nearby is not available.

Figure 3.2a & 3.2b - Water Resources & Sensitive Habitat Composite Map



- x ADP Study Limits
- Wildlife Area
- Refuge Area
- ▨ Conservation Area
- Mitigation Corridor
- Steep Slopes (>15%)
- Fauna Special Species
- Flora Special Species
- RPA Boundary
- Riparian Buffer
- Grassland Management Areas
- Wetland
- ▨ Flood Zone



*Refueling Station - Building 1124 and existing storage yard to be retained*

## Cultural Resources

### **Historic Resource Constraints**

*Historic Structures* - The ADP parcel includes 25 historic structures located on the eastern portion of the development area (see Figure 3.3). These 25 structures are all located within, and contribute to the Fort Belvoir Historic District. Of the 25 historic structures, 24 are National Register of Historic Places (NRHP) eligible, and the eligibility of the other one remains to be determined.

*Historic District* - The development areas for the ADP parcel include 11.5 acres of the Fort Belvoir Historic District along Gunston Road (see Figure 3.3).

Development within the historic district is permitted, however, mitigation measures should be considered. Example measures include tree buffers, building height restrictions so that the structure cannot be seen from the resource, and development and design themes matching the theme of the historic district. The portion of the IDP parcel overlapping the historic Gerber Village housing area should be avoided.

*Table 3.2 - Cultural Constraints Located in the Study Area*

Resource	Size or Number	Units	Comment/Description
<b>Cultural and Historic Resource Constraints</b>			
Historic Buildings	25	Each	See historic district description that follows.
Fort Belvoir Historic District	11.5	Acres	Negligible impact would be expected. Development within the historic district is permitted, however, design of buildings to reflect the character of the historic district should be considered.

Figure 3.3 - Cultural Resources Map



- x ADP Study Limits
- Historic District
- Historic Structures

## Operational Resources

### ***Airfield Restriction***

The entire ADP parcel (255.3 acres) is within the building height restriction zone for Davison Army Airfield. The airfield restriction is a height of 150 feet above the runway out to a distance of 7,500 feet from the runway centerline. After that, the height increases at a ratio of 1:20, or 5 feet per 100 feet. The runway elevation is given as 73 feet above mean sea level. Designs for the ADP parcel should reflect the site specific ceiling limits for each portion of the development areas.

### ***Former Training Range***

The ADP parcel includes approximately 49.9 acres of former training range (see Figure 3.5). The range to the west of the parcel is designated the Tracy Road Small Arms Range. Historical aerial photography and record searches have indicated the range contained multiple firing points and multiple berm areas that could have been used as impact areas. Based on the use of the range as a small arms range, costly UXO removal is not warranted however, initial site investigations indicated elevated lead in soil. Further investigation is required to delineate the environmental impacts. Depending on the time frame of development for this area, this range may be addressed under the Military Munitions Response Program (MMRP) prior to development. If possible, the pending investigation of the area should be prioritized to aid in determining the unconstrained areas available for new development. There are also 2 active ranges, Range T4 and Range T17, at the north and south ends of the ADP respectively. These areas have not undergone a historical use review due to their active status. A review of the potential contamination on the ranges and features of the ranges would be required before development could occur.

### ***Hazardous Waste Management Units (HWMUs)***

Three HWMUs are located within the development areas of the ADP parcel. The location of these HWMUs are illustrated in Figure 3.5 and summarized in Table 3.3. 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 would require reopening the site to properly protect human health and the environment.

*Table 3.3 - Summary of Hazardous Waste Management Units for the ADP study area*

SITE ID	Description
1124-hpcs	Underground Storage Tank at Building 1124
00714-hpcs	Aboveground Storage Tank at Building 190
00625-hpcs	Waste Storage Facility at Building 625

### ***Solid Waste Management Units (SWMUs)***

The ADP parcel includes 33 SWMUs which are scattered throughout the development area (see Figure 3.5). Table 3.4 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 \$1,000,000, and if fully funded would take about a year 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.

**Table 3.4 - Summary of Solid Waste Management Units for the ADP study area**

SWMU ID	Description
A-02	Theote Road Debris Landfill
A-05	Road and Grounds/Land Management Storage Area
A-24	Former DPDO Storage Area - PCB Spill Site
C-01	Former Wash Rack
C-10	Bldg... 1119 Heavy Equipment Wash Rack
C-11	Bldg... 715 Wash Rack
D-06	Roads and Ground/Land Management Sump
D-09	Bldg... 1119 Heavy Equipment Wash Rack Oil/Water Separator
D-11	Bldg... 715 Oil/Water Separator
E-13	Bldg... 715 Waste POL Storage Area
G-08	Bldg... 1146 Former UST
G-10	Bldg... 1116 Underground Waste POL Tank
H-02	Bldg... 1146 Battery Storage Area
H-05	Bldg... 1116 Battery Storage Area
I-04	Bldg... 707 Battery Acid Neutralization Unit
L-07	Bldg... T1125 Bulk Diesel Pumping Station
L-10	Bldg... T1122 Bay K1AAA
L-18	Bldg... 1089 Recycling Center
L-23	Bldg... 1116 Scrap Storage Area
L-24	Former Steam Cleaning Solvent Tanks (3)
L-34	Bldg... 1124 Below Ground Oil Spill
L-36	Bldg... T1120 Drum Storage Area
L-40	Rifle Range - 2 Landfill Area
L-44	Bldg... T1113 Pesticide Equipment Wash Pad
N-06	Waste Oil UST Storage Area
N-09	Power Unit School/Former DPDO Storage Area - Used Battery Storage Area
N-11	Former DPDO Storage Area
N-23	Post Dump

**Petroleum Storage Areas (PSAs)**

106 PSAs, 36 active and 70 inactive, have been identified on the ADP parcel (see Figure 3.5). Table 3.5 summarizes the active PSAs and Table 3.6 summarizes the inactive PSAs. 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 Underground Storage Tanks (USTs), 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.

**\*Table 3.5 - Summary of Petroleum Storage Areas (Active) for the ADP study area**

Tank ID				
01109A	00704C	01124H	01139A	01148B
01109B	00705A	01126F	01141A	01147A
00193B	00706A	01132I	01142A	01150A
00612A	00707B	01132J	01143A	01124L
00630B	01114B	01133E	01143B	01089C
00631A	01124C	01133G	01144A	00193C
01124I	01108A	01114A	01134A	01133F
01124M				

**\*Table 3.6 - Summary of Petroleum Storage Areas (Inactive) for the ADP study area**

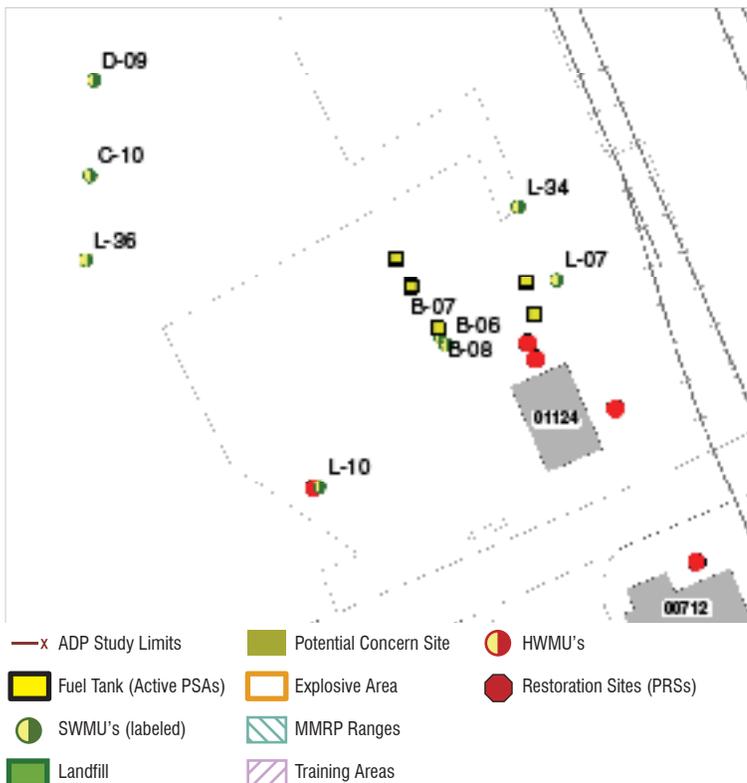
Tank ID				
00704B	01126D	01131C	00707C	00717F
01116C	01132B	00630A	00709A	01126E
01132C	00715A	00717G	01127A	01132E
01115C	01146A	01138B	01132D	00715B
00717H	01127C	01132F	01115B	01148A
01116D	00193A	00717A	00753A	00127D
01146B	01115D	01104A	01122B	00701A
00717B	01032A	01127E	00721A	01124J
01109C	01124F	00712A	00717C	01089B
01127B	00714A	01124K	01124D	00704A
00740A	00717D	01101A	01131B	01122A
01124A	01131A	00714B	00707A	00717E
01116B	01132A	01122C	01124G	01124E
01119A	01126A	01126B	01126C	01124B

\* Note: Tables 3.5 and 3.6 reflect both above ground and below ground storage tanks (ASTs and USTs). GIS maps do not distinguish between the two. See ENRD for further details.

Table 3.7 - Operational Resources Located in the Study Area

Resource	Size or Number	Units	Comment/Description
<b>Operational Resources</b>			
Airfield Restrictions	140-200	Feet	See Appendix for Airfield discussion. Further site studies should be done once the site is selected.
Former Training Range	49.9	Acres	The ADP contains 3 ranges including 35.3 acres of the former Tracy Road Small Arms Range, 6.5 acres of the active Range T4, and 8.1 acres of the active Range T17. The inactive Tracy Road range does not contain UXOs although elevated lead levels were identified in soil during the site investigation.
Solid Waste Management Units (SWMUs)	33	Each	Many SWMUs will require environmental investigations to determine the nature and extent of impacts. Site investigation work plans will require EPA and VDEQ approval. These can be performed concurrently with site preparation activities.
Petroleum Storage Areas (PSAs)	106	Each	There are 36 active and 70 inactive PSAs in the ADP. 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 AST 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)	24	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.

Figure 3.4 Inset of Operational Resources Map



\*Note: Only active fuel tanks are shown.

### Petroleum Release Sites (PRSs)

24 PRS have been identified in the ADP parcel. Figure 3.5 illustrates the locations. These PRS are summarized in Table 3.8. 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 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 overall construction schedule. Excavation and

Figure 3.5 - Operational Resources Map



- x ADP Study Limits
- Fuel Tank (Active PSAs)
- SWMU's (labeled)
- Landfill
- Potential Concern Site
- Explosive Area
- MMRP Ranges
- Training Areas
- HWMU's
- Restoration Sites (PRSs)

\*Note: Only active fuel tanks are shown.

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.

*Table 3.8 - Summary of Petroleum Release Sites for the ADP study area*

Petroleum Release Site			
ca_01138_1	ca_00715_1	ca_01124_1	ca_00740_1
ca_01116_2	ca_00630_1	ca_00707_1	ca_01124_2
ca_01146_1	ca_00193_1	ca_01121_1	ca_00701_1
ca_01101_1	ca_01124_3	ca_01146_2	ca_00753_1
ca_01127_1	ca_00712_1	ca_01116_1	ca_01131_1
ca_00717_1	ca_00709_1	ca_00714_1	ca_01133_1

*Table 3.9 - Other Environmental Regulatory Considerations for the Study Area*

Resource	Size or Number	Units	Comment/Description
Air Quality	N/A	N/A	Air quality permitting requirements will require all development be involved in calculating pollution loads and determining most prudent air permitting course of action. Exceeding the threshold value of 100 tons of NOx per year would trigger additional permitting requirements for large Fort Belvoir development projects.
Construction Permits	TBD	N/A	Disturbance of wetlands will require permit. Also required are a Sediment and Erosion Plan and a Registration Statement.

## Other Constraints

### Air Quality

If the pollution loads of a single proposed development in the IDP parcel exceed 100 tons of NOx per year, a nonattainment New Source Review (NSR) 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

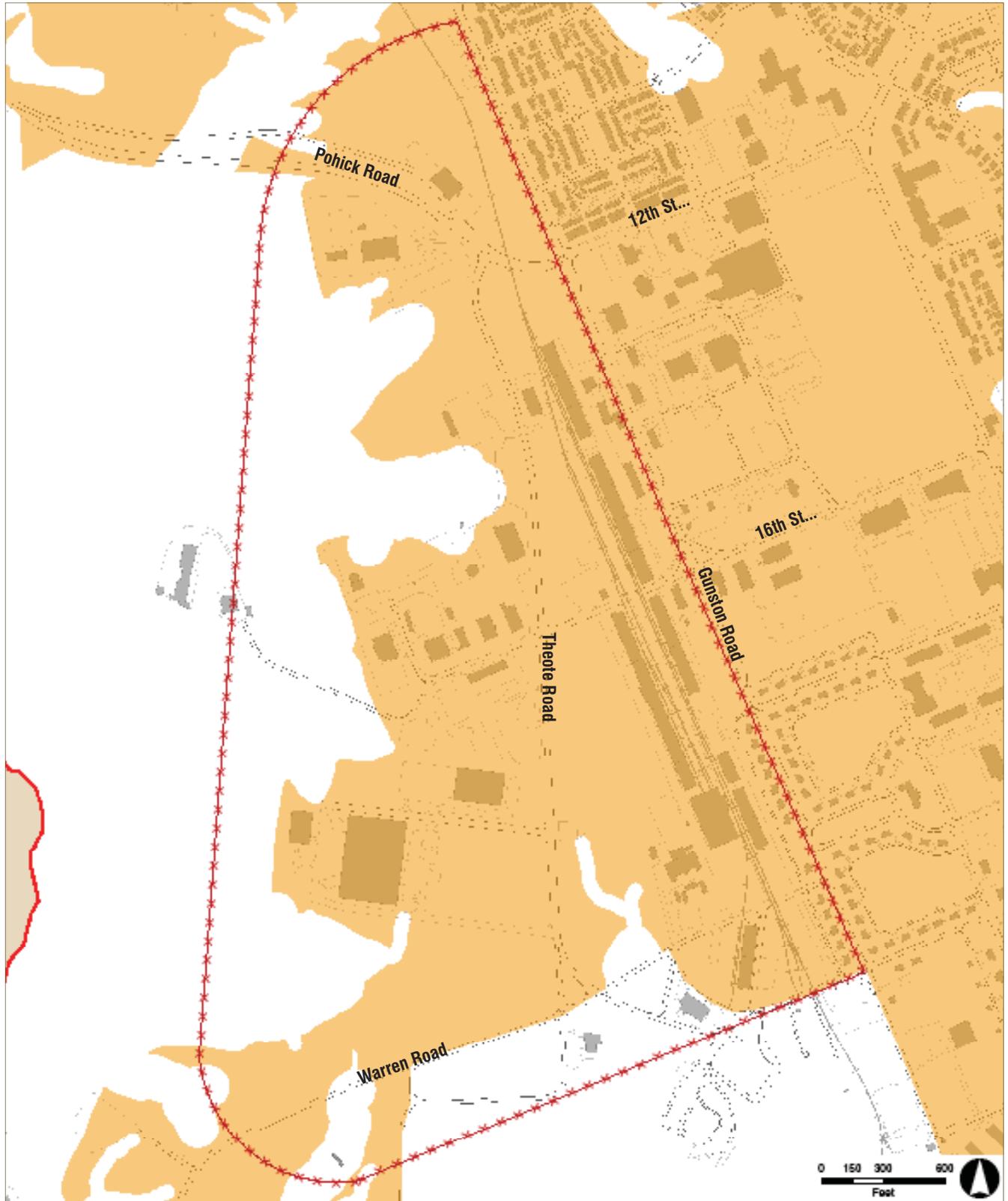
Construction activities that disturb wetlands will require a wetland permit. A Fort Belvoir agent or contractor will need to prepare and submit a sediment and erosion control plan to Fort Belvoir's Directorate of Public Works and Environmental and Natural Resources Division (DPW-ENRD) for approval as Fort Belvoir holds a MS4 Permit and self-regulates in this arena.

## 3.2 Developable Areas

Developable areas within the study area are shown in Figure 3.6. Developable areas are not limited by the previously described development constraints, except for building height restrictions due to the airfield constraints. Because these areas are the most cost-effective and readily available, development plans will aim to completely utilize developable areas before venturing onto constrained land.

The Developable 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. Of the 255 acres of the ADP study area, 162 acres are considered developable.

Figure 3.6 - Developable Areas Map



- x ADP Study Limits
- Developable Areas

### 3.3 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.

All these facilities are included in Fort Belvoir.

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 60 buildings, totaling over 600,000 GSF. (See Figure 3.7). Although 13 family housing units fall within the study area, they are not considered in the building inventory. Appendix B 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). Table B-2 (in Appendix B) lists nearly 400,000 SY of open storage structures, of which roughly 340,000 SY is currently used as a storage lot for RVs.

Figure 3.7 Industrial Area Site Map

\* See Appendix B for total SF of all existing facilities and outdoor storage



193 ADMIN GP	702 STORAGE/ADMIN	713 TRANSFORMERS/SUB/SWIT STA BD	1031 SEWAGE PUMP	1109 STORAGE	1124 FUEL/POL BLDG.	1144 STORAGE
194 EMERGENCY GENERATOR	704 STORAGE	714 CIDC FLD OPS BD	1032 EMERGENCY GENERATOR	1110 STR SHED	1126 STORAGE	1145 STORAGE
195 PLT/UTIL BLDG.	705 EXCH WAREHOUSE	718 FLAM MAT STR IN	1089 RECYCLE/REFUSE/GARB	1111 DIESEL STR UNGD	1132 GEN REP INST	1146 VEH MAINT SHOP
610 VET FACILITY	706 EXCH WAREHOUSE	722 REC SHELTER	1101 ELE MAINT DEPOT	1112 FLAM MAT STR IN	1133 STORAGE	1147 REC EQ CHECKOUT
612 ADMIN	707 MNT GEN PURPOSE	740 STORAGE	1102 ANIMAL SHELTER	1113 STORAGE	1134 FLAM MAT STR IN	1148 MNT GEN PURPOSE
629 STORAGE	708 STORAGE	766 STORAGE/ADMIN	1106 OIL STR BLDG.	1114 STORAGE	1139 EXCH WAREHOUSE	1150 EXCH SER OUTLET
630 ADMIN/STORAGE GP/WHSE	709 STORAGE	767 STORAGE GP/MNT GEN PURPOSE	1107 STORAGE	1116 VEH MAINT SHOP/CO HQ BLDG.	1140 STORAGE	1151 TRANSFORMERS/PLT/UTIL BLDG.
701 STORAGE/ADMIN	710 STORAGE	768 STORAGE	1108 STORAGE	1117 STORAGE SILO	1141 STORAGE	
	711 STORAGE			1123 AMMO STR OTHER	1142 STORAGE	
	712 STORAGE/ADMIN				1143 STORAGE	



*Buildings with minor facility conditions or a Q-1 ISR rating can support the tenant organizations required missions without much initial repair or maintenance.*



*Buildings with lower ISR ratings require more repair and renovation, or are set to be demolished.*

## **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 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 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 3.11 that follows.

Q-ratings for facilities can be found in the Installation Status Report (ISR). Table 3.10 is an excerpt of the Fort Belvoir ISR that lists 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 Figure 3.8).

Currently, about 30 buildings within the ADP study area are rated. Three are rated as Q-4, and are to be demolished unless there is substantial evidence that a renovation is practical. Five buildings are rated Q-3, and can be repaired, renovated, or demolished if this proves not to be cost-effective. The remaining buildings are in good to fair condition.

Table 3.10 - ISR Ratings for Buildings in the ADP Study Area

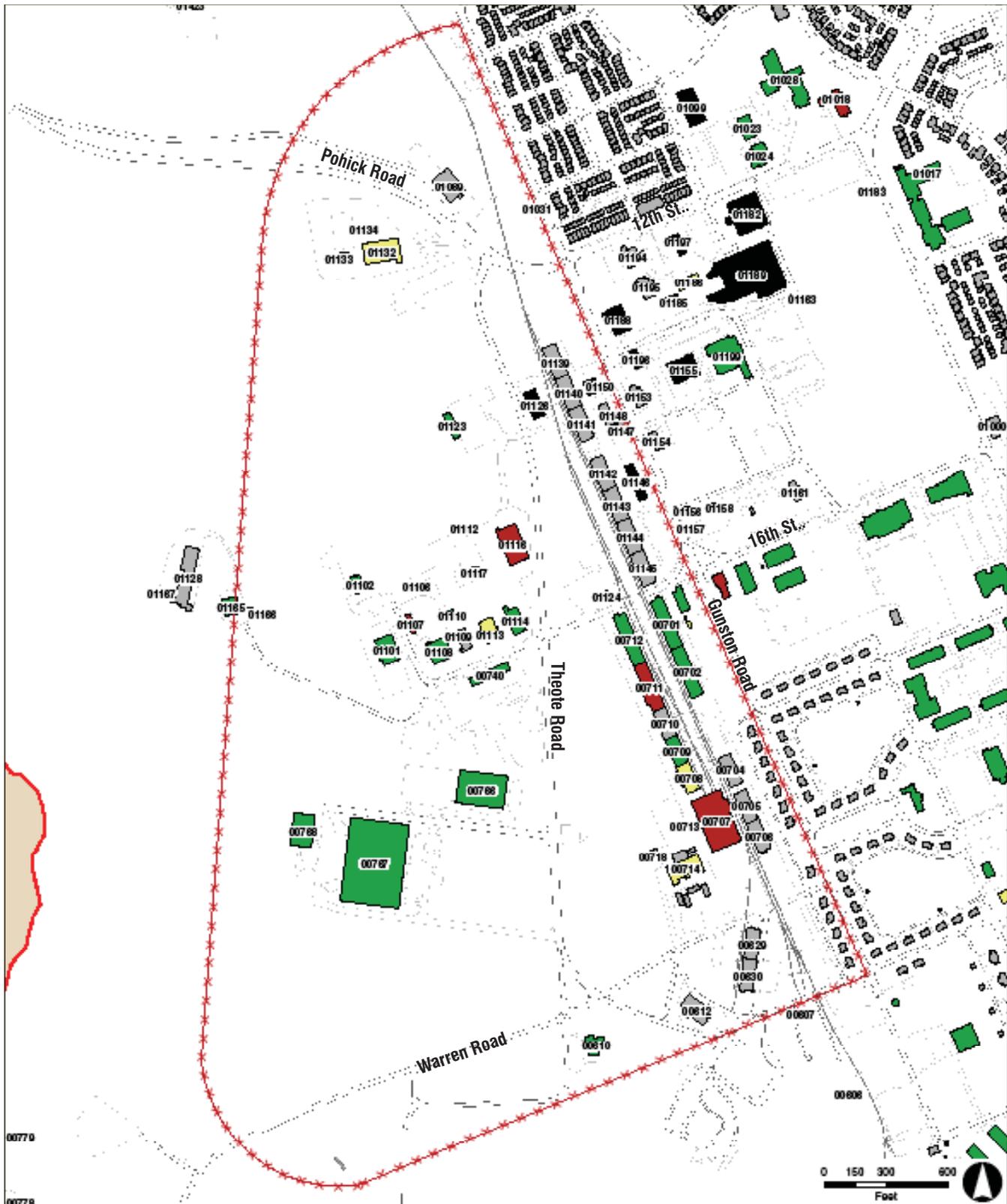
Facility No.	ISR Rating	Structure Name	Built Date	Address ID	To Be Demolished
00193	Q-1	ADMIN/ADP FACILITY	1934	9805 LOWEN ROAD	
00194	Q-1	DISTR TRANSFORMER	1935	LOWEN ROAD	
01102	Q-1	KENNAL	2003	PRATT ROAD	
00712	Q-1	WAREHOUSE, GEN PURP	1946	9801 DALRYMPLE ROAD	
00713	Q-1	DISTR TRANSFORMER	1935	DALRYMPLE ROAD	
01108	Q-1	WAREHOUSE, GEN PURP	1955	6034 16TH STREET	
00740	Q-1	FE FAC, FE CONTRACTOR	1934	6023 16TH STREET	
00766	Q-1	FACILITIES ENGINEER STOREHOUSE	1994	9910 TRACY LOOP	
00767	Q-1	DSS-W WAREHOUSE	1994	9925 TRACY LOOP	
00768	Q-1	RECREATIONAL EQUIPMENT STORAGE	1994	9940 TRACY LOOP	
00610	Q-1	MCNELLIS VETERINARY FACILITY	1993	10015 THEOTE ROAD	
00709	Q-1	WAREHOUSE, GEN PURP	1944	9815 DALRYMPLE ROAD	
00701	Q-1	WAREHOUSE, GEN PURP	1946	9800 LOWEN ROAD	■
01110	Q-1	STOREHOUSE, FLAMMABLE MTRL	1961	6024 16TH STREET	
01114	Q-1	STOREHOUSE, GEN PURP	1938	6014 16TH STREET	
01123	Q-1	AMMUNITION BUNKER	2003	THEOTE ROAD	
00702	Q-1	WAREHOUSE, GEN PURP	1946	9810 LOWEN ROAD	■
01151	Q-1	DISTR TRANSFORMER	1935	LOWEN ROAD	
01101	Q-1	WAREHOUSE, SIGNAL SPT MAINT	1991	9820 PRATT ROAD	
00195	Q-2	UNINTERRUPTABLE POWER SOURCE	1992	9811 LOWEN ROAD	
00714	Q-2	GENERAL PURPOSE ADMINISTRATIVE	1960	9900 DALRYMPLE ROAD	
00708	Q-2	WAREHOUSE, GEN PURP	1946	9819 DALRYMPLE ROAD	
01113	Q-2	STOREHOUSE, FE	1946	6020 16TH STREET	
01132	Q-2	GEN PURP MAINT SHOP	1941	9580 THEOTE ROAD	■
00711	Q-3	WAREHOUSE, GEN PURP	1946	9805 DALRYMPLE ROAD	
00707	Q-3	VEH MAINT SHOP	1935	9901 DALRYMPLE ROAD	
01116	Q-3	GEN PURP MAINT SHOP	1956	6010 16TH STREET	
01134	Q-3	STOREHOUSE, FLAMMABLE MTRL	1949	KING ROAD	■
01107	Q-3	STOREHOUSE, GEN PURP	1959	6028 16TH STREET	
01146	Q-4	VEHICLE MAINTENANCE SHOP	1942	9765 LOWEN ROAD	■
01150	Q-4	ADMIN FAC, AAFES	1934	9745 LOWEN ROAD	
01126	Q-4	WAREHOUSE, GEN PURP	1955	9701 THEOTE ROAD	

Table 3.11 - 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](http://www.ima.army.mil/sites/pw/digest/pwd_janfeb06.pdf)

Figure 3.8 - Facility Installation Status Report (ISR) Rating



- x ADP Study Limits
- Facility ISR Rating
- Not Rated
- Q-1
- Q-2
- Q-3
- Q-4

## 3.4 Circulation Patterns

Development on Fort Belvoir before World War II occurred primarily on its South Post plateau. This flat terrain permitted roadways to be laid out in an efficient grid pattern, with roads generally perpendicular to each other. Buildings were subsequently sited orthogonally with these street alignments to establish a formal geometrical plan.

The ADP study area is located where the hierarchy of this formal geometric plan transitions into a less structured one with curvilinear roads. The grid plan of the study area extends from 12th Street at the north to 21st Street at the south, and between Gunston Road and the alleys providing circulation around the WWII warehouses.

### Roadway Categories

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**

Primary roads provide main access into the Post, as well as internal circulation, and are heavily traveled. Primary roads include Theote and Pohick located within the study area, and Gunston running along its edge.

Pohick Road is the main gateway for traffic destined to the existing industrial areas of Fort Belvoir, with the exception of those trucks destined to the D-CEETA or the DLA complexes. The latter two complexes have their own truck inspection areas. All other truck deliveries are required to go through Tulley Gate for vehicle inspection. Once trucks clear inspection they travel along Pohick Road until they reach Theote Road or Gunston Road. These two roadways are the primary paths for truck circulation on Main Post.

Currently, there are three signalized intersections within, or adjacent to the Industrial Campus:

- Pohick/Theote Roads
- Pohick/Gunston/12th Street
- Gunston/16th Street

There are no bottlenecks within the Industrial Campus; however, bottlenecks exist adjacent to the area. The intersections of Pohick/Gunston/12th and Pohick/Theote are often called the “100% corner” in which all traffic entering Tulley Gate and all traffic from lower South Post destined to North Post will pass through. This often causes some congestion during peak times of travel. Also, during the PM peak period, traffic at the intersection of Route 1/Pohick Road sometimes backs up to the industrial area due to the heavy existing traffic.

#### **Secondary Roads**

Secondary roads on South Post are generally cross streets that run in an east-west direction. Mainly, these provide access to Post facilities and smaller roads. Secondary roads within the study area are Warren, Lowen, and 16th Street.

#### **Alleys**

Alleys on South Post provide limited access to individual buildings. These are usually one-way single lanes, and never more than two-lanes. Also in the study area adjacent to warehouses, paved areas are provided for loading zones.

#### **Railroads**

In the past, Fort Belvoir relied on its railroad system to transport goods on and off the Post. This system connected to off-Post railway corridors, including the CSX rail to the north. In the Industrial Area, railway loading, unloading, and the storage of goods occurred in the past. Today, the railroad is no longer active, but this right-of-way has been preserved.

## **Future Development Considerations**

Roadway layout at Fort Belvoir significantly influences its visual character and direction of physical development. Consequently, it is important to consider the impacts of any new road alignments or changes in circulation patterns.

### ***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 planting

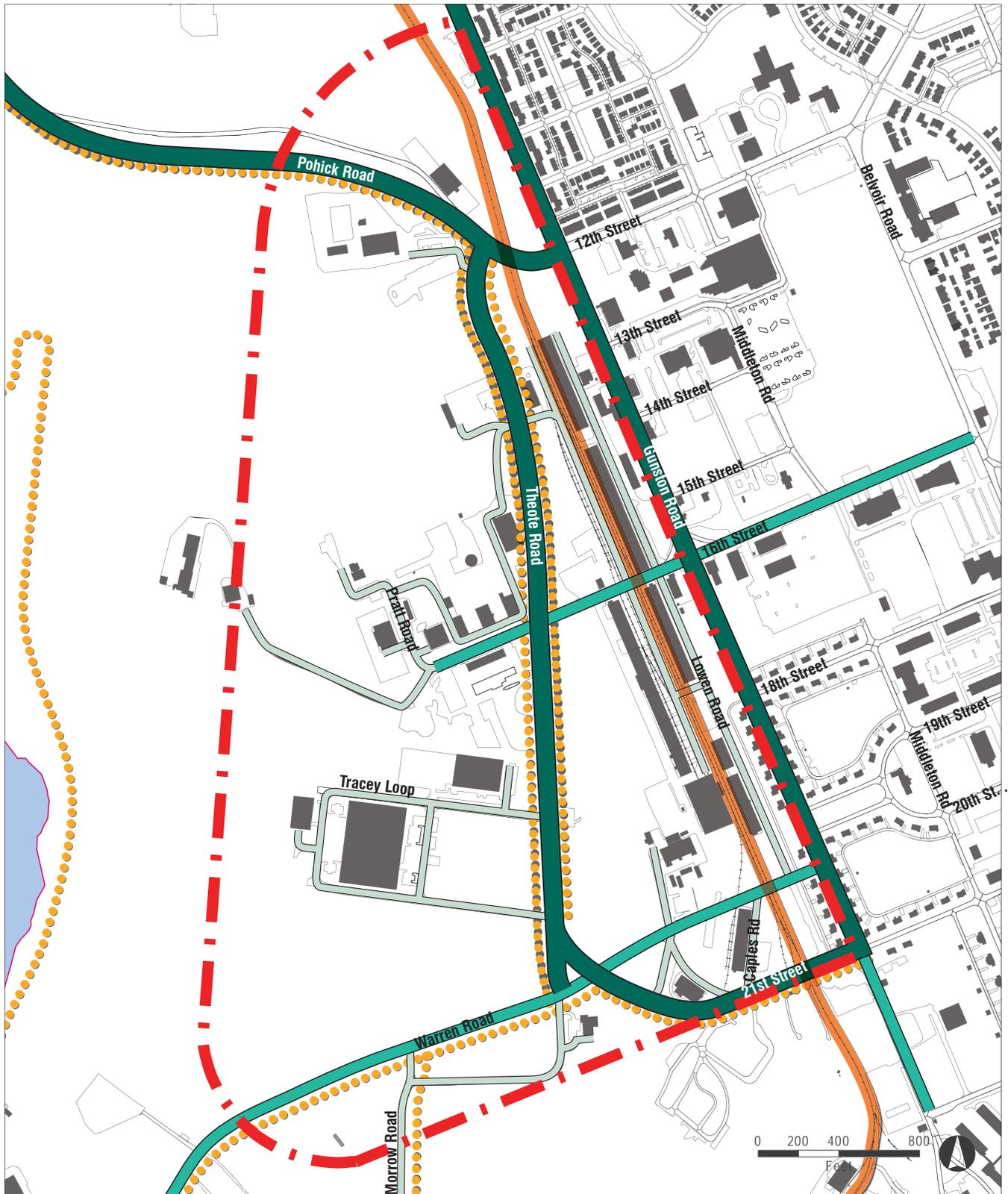
### ***Pedestrian Circulation***

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 Town Center. 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

As the Post becomes more densely populated, it will be important to provide access to alternate modes of transportation. One option worth pursuing would be the establishment of a shuttle bus service and busways to transport riders between perimeter parking areas, proposed transit stations, community service sites, housing, recreational areas, and facilities on Post.

Figure 3.9 - Existing Circulation Patterns



- ADP Study Limits
- Abandoned Railroad Right-of-Way
- Primary Roads
- Secondary Roads
- Alleys
- Pedestian

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# Program Requirements

# 4

## CHAPTER

Program requirements for the Industrial campus must meet the functional and space requirements of current tenants, integrate projects proposed in the SRC and LRC, and plan for future uses.

### 4.1 Existing tenants and functions

The following facilities/functions are proposed to be retained in their current condition:

- Building 193 – This is an older facility, appropriately located in the transition area, which has undergone extensive renovations to correct site drainage. INSCOM storage could be relocated from this building, if this space is needed for other purposes.
- Building 1102 – Animal shelter for Military Police working dogs – This unique, recently constructed facility is in good condition.
- Building 610 – Veterinary Clinic – This facility is appropriately located, however an optional location is suggested in Alternates B and C (see Chapter 6).
- Building 1089 – Recycling Center – This facility is appropriately located.
- Building 766 – Currently occupied by RCI, this facility will become DOL administration and storage.
- Building 767 – This recent construction is in good condition.
- Building 768 – This is a recent construction.
- Building 1124 – This historic building serves as the government gas station and is appropriately located, but has contamination issues in its surrounding soils making redevelopment of this area for other uses costly.

The following functions can be relocated from the Industrial Area:

- The 29th LID (Reserve Unit) can relocate to any administrative space.
- Ammunition storage bunkers should be relocated to the southwest area of the Post.
- MWR recreational equipment storage in Building 1147 can be consolidated with existing MWR storage on Post.

The following tenants can be consolidated in new facilities on the Industrial campus:

- Current base maintenance contractor (KIRA) and RCI maintenance – These are scheduled for short-term co-location. RCI operation levels are expected to fall off after construction is complete, while demand for base maintenance is expected to increase with the addition of new facilities, leaving only base maintenance operations long-term.
- AAFES storage – Its space requirement may be impacted by the construction of the new exchange.
- Storage for the garrison, night vision laboratories, and records management
- USAISC flammable storage and electrical maintenance depot
- Car/truck rental agency and government travel agency – These community uses could be relocated to the office loft district.
- DTRA – Although this agency proposes to renovate Building 1116, it can be relocated, but requires a secure compound.
- Prime Power School – Moved off-Post, this would be replaced by the 249th Battalion (Prime Power) headquarters. (See Proposed Projects that follow.)
- Veterinary Clinic, related administration, and medical warehouse – Currently these are planned as a renovation and addition to the existing Veterinary Clinic, Bldg. 610 (see Proposed Projects that follow).

## 4.2 Proposed Projects

The Industrial ADP is an integral part of the RPMP for Fort Belvoir. This study incorporates proposed or programmed projects described in various plans, including the SRC, LRC, and other ADPs. Table 4.1 lists proposed SRC and LRC Projects.

*Table 4.1- Proposed SRC and LRC Projects to be located in the Industrial Area*

1391 Project Number	Project Name	PROJECT DESCRIPTION/ (COMMENTS)	FUNDING SOURCE	OVERALL SIZE (GSF)	SIZE (GSF/PN)	CWE	1391 PROGRAM YEAR (FY)
58697	<b>Museum Support Center</b>	Construct a fabrication and storage facility for the Army Museum	MCA	124,775		\$27 M	<b>2008</b>
63035	<b>Shoppette with Gas, Burger King, Car Wash</b>	Construct a shoppette with gas dispensing facility, car wash, and Burger King fast food operation on South Post. (Award expected in May 2007.)	AAFES	7,233	7,233 SF	\$3.6 M	<b>2008</b>
59554	<b>Battalion Headquarters for 249th Battalion</b>	Construct battalion and company headquarters complex. Current site is corner of Theote Road and Pohick Road, replacing existing Prime Power School buildings. (Cost estimate, based on 2008 construction schedule may have to be re-done.)	MCA	47,253	BN HQ: 14,560 SF CO OPS: 20,793 SF Org Class: 4,585 SF Veh Maint: 67,139 SF Deployment Eqpt, Storage: 2,815 SF Oil Storage: 360 SF	\$25 M	<b>2014</b>
50356	<b>Tactical Equipment Maintenance Facility</b>	Construct a warehouse and motor pool complex to replace existing out-dated facilities.	MCA	74,300	74,300 SF	\$16 M	<b>2014</b>
57498	<b>Replace 1400/1900 Warehouses</b>	Replace existing warehouses with modern, more efficient facilities.	MCA - Validated	83,000	83,000 SF	\$9.2 M	<b>2015</b>
62539	<b>Vet Clinic Addition</b>	Construct an addition to the existing veterinary clinic on South Post.	MCA	4,250	Add: 4,250 SF Ren: 5,728 SF	\$2.4 M	<b>2015</b>
61457	<b>Vehicle Maintenance Shop</b>	Replace TMP Motor Pool	MCA			\$8.5 M	<b>2015</b>
	<b>Total</b>			<b>340,811</b>			

## 4.3 Displaced Facilities

Several current ADPs that address areas outside the study area call for the displacement and demolition of industrial uses in their long-range plans. These existing uses (with their square-footage requirements) are now being relocated to the Industrial area, and are incorporated in this Industrial ADP:

- Troop Village ADP displaces about 29,500 SF of office space, 7,700 SF of flammable

material storage, and 11,500 SF of hazardous material storage. Most of the office space should be located in other areas of Fort Belvoir. It may also be located in the buffer zone of the Industrial ADP preferred alternative along Gunston Road. General warehouse space currently in the 1400 Area is planned to be moved to the industrial Area with project number 57498, starting construction in 2015. The Prime Power School in Bldgs 1416, 1417 and 1418, is moving to Ft. Leonard Wood, Missouri, under the current BRAC initiative.

The Prime Power Battalion, which shares these facilities with the school, is moving to the north end of the Industrial ADP under project number 59554, starting construction in 2014. The base maintenance contractor, occupying Bldgs 1419 and 1420 is planned to be relocated in the Industrial ADP, although there is presently no specific project to do this.

- Town Center ADP displaces about 10,000 SF of the garrison motor pool, currently used as a vehicle maintenance shop and office space.
- Lower North Post ADP displaces about 18,000 SF of troop motor pools and vehicle maintenance shops. Some of this space, used by the 911th Engineers is planned to be moved to the Davison Army Airfield ADP, under project number 70935, starting construction in 2014.

In short, approximately 233,514 SF of building space and motor pool space (based on pavement shown on GIS layers) are presently designated in the other area development plans to be relocated to the industrial area. This programmed space is accounted for in Alternative Plans A, B, and C, and are referred to as “displaced facilities” in the tabulations.

Motor pools typically require large areas to accommodate fleet vehicles and accessory uses such as refueling stations and parts storage. They are noisy and visually unattractive; therefore, in order to screen motor pools and vehicle maintenance shops from family housing in Gerber Village and other future residential and community facilities along Gunston Road these uses should be located west of Theote Road.

<i>Table 4.2 - Displaced Facilities from Other ADPs</i>			
BLDG. NO.	EXISTING USE (FROM RPI TAB)	SIZE (GSF)	COMMENTS
<b>From Troop Village ADP</b>			
1412	Storage - General Purpose	5,125	
1414-1415	Storage - General Purpose	98,426	*See note above.
1434	Administrative Office - General Purpose	14,730	
1434	Storage - General Purpose Instructional	17,289	
1436	Administrative Office - General Purpose	4,605	
1436	Storage - Flammable Material	7,748	
1440	Storage - General Purpose	14,387	
1484	Storage - General Purpose	4,112	
1490	Storage - Hazardous Material	4,112	
1491	Storage - General Purpose Instructional	4,112	
1495	Storage - Hazardous Material	7,337	
1495	Administrative Office - General Purpose	1,194	
1496	Storage - General Purpose Instructional	4,080	
1497	Storage - General Purpose Instructional	4,112	
1498	Administrative Office - General Purpose	4,417	
1499	CO HQ Building	2,291	
1499	Administrative Office - General Purpose	2,201	
<b>TOTAL</b>		<b>200,278</b>	These facilities do not include programmed projects reflected in Table 4.1.
<b>From Town Center ADP</b>			
186	Dispatch Office - TMP Motor Pool		Based on Table for Existing Facilities in ADP Report
189	Vehicle Maintenance Shop	4,820	
189	Administrative Office - General Purpose	1,672	
189	Dispatch Building	3,345	
<b>TOTAL</b>		<b>9,837</b>	These facilities are included in 1391 project no. 61457. See Table 4.1.
<b>From Lower North Post ADP</b>			
1906	Vehicle Maintenance Shop	5,360	
1943	Storage - Flammable Material	264	Based on Table for Existing Facilities in ADP Report
1946	Grease Rack		
1947	Storage	120	
1948	Storage - Flammable Material	120	
1949	Vehicle Maintenance Shop	12,627	Uses are displaced. Facilities are
1950	Vehicle Maintenance Shop	4,908	Converted to new use.
<b>TOTAL</b>		<b>23,399</b>	
<b>GRAND TOTAL</b>		<b>233,514</b>	

## 4.4 User Surveys Results

Important criteria for developing an ADP include: understanding all the industrial types, their functions, space requirements (indoor warehouse and outdoor storage), and operational requirements (loading areas, motor pools, noise generation, and expansion). To better define these development criteria for programming, Belvoir New Vision Planners (BNVP), in consultation with Fort Belvoir DPW, developed a comprehensive questionnaire that was distributed to 47 Real Property Planning Board (RPPB) stakeholder organizations. To date, 12 responses have been received. See Appendix C for the full lists.

A summary of some key comments follow:

- Kennels for military working dogs should be located away from active, built-up areas that could interfere with the dogs getting adequate rest. Barking dogs could also create a noise problem for surrounding facilities. Requirements for space and security are outlined in DA PAM 190-12.
- Missile Defense Agency (MDA) requires about 500 SF of admin/office space and 7,500 SF of storage. It prefers sharing a remote inspection facility for truck screening with an organization of an appropriate level of clearance.
- Program Executive Office Enterprise Information Systems (PEO EIS) requires a total of 25,000 SF of warehouse space to house current storage requirements in Building 1415 and commercially leased space off-Post. It also requires additional storage requirements due to BRAC directed moves from Fort Monmouth. PEO EIS headquarters is currently located in Building 1445.
- MWR prefers to remain in Building 768 to expand and consolidate its entire operations in this one facility.
- Fort Belvoir Residential Communities (FBRC) has long-term needs (next 50 years) of 20,000 SF of exclusive warehouse space and 10,000 SF of office space. It also requires, until 2011, 25,000 SF (0.6 acres) of an exclusive storage yard for construction of homes.
- Defense Acquisition University (DAU) currently has 5,000 SF of storage space in Bldg... 1143 in the Industrial Area and their space requirements are not expected to change in the long-term.
- INSCOM requires 75,000 SF of exclusive warehouse space, 4,000 SF of administrative office space, 5,000 SF for a shipping/receiving area, 1,000 SF of covered storage, 1,000 SF of open storage, a 15,500 SF staging area, and 25-30 parking spaces.
- Directorate of Logistics (DOL) requires a separate facility since they have heavy usage of outdoor area for loading and unloading.
- There are 32 Solid Waste Management Units (SWMUs) in the Industrial Area that are not to be disturbed until the sites are closed in the SWMU program.

In summary, user surveys identified demands for new warehouses and administrative office buildings, with access to open storage and/or staging areas. Required space is unique to each user, with no typical standard.

## 4.5 Program Summary

Existing Uses to Remain	484,499 SF
1391 Uses	340,811 SF
Displaced Facilities	233,514 SF
Expansion (from User Surveys)	147,000 SF
<b>Total</b>	<b>1,205,824 SF</b>
<hr/>	
Adjusted Surplus Enclosed Storage*	65,205 SF
<b>**Total</b>	<b>1,140,619 SF</b>

\*Per Sigma Study - See analysis or excess space TAB in SRC

\*\*Note: The 1,140,619 SF total is referred to in the Plan Tabulations as the "Documented Program."

## 4.6 Building Type Recommendations

User survey results indicate that many of the existing tenants require warehouse and outdoor storage space to support their current mission. The amount of space needed by these tenants varies from 7,500 square feet of storage for MDA to 75,000 square feet for INSCOM. As Belvoir continues to grow its workforce population, new warehouse and support buildings will need to be designed in a manner that can adapt to various space requirements for specific users. With the arrival of over 19,000 BRAC office and administrative workers coming to the base, the establishment of “flex” style warehouses supporting multiple tenants in one building is an important program requirement of this ADP. Concentrating similar uses in well-landscaped industrial park setting will create greater efficiency of the land while being compatible with adjacent uses located on the main post. Smaller support businesses, such as contractors, light industrial fabricators, and mechanics, require functional truck loading areas and service access to their building while maintaining operational accessibility to the rest of the base. In summary, the industrial area requires a variety of warehouse building types that can support a large single user with specialized needs and a “flex” style building structure that can internally grow and/or contract to support the space demands for multiple tenants.

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# Planning Principles

## 5 CHAPTER

### 5.1 Overview

Implementing the Industrial Area Development Plan with its new buildings and reorganization of street plans creates greater efficiency in land use. Implementation also facilitates the development of the 2030 Master Plan Document and sub-area plans. By relocating existing scattered similar industrial uses on the Main Post to a consolidated industrial site, land can be more suitably redeveloped to meet the projected growth demands identified in the 2030 plan.

### 5.2 LEED Principles

The 2030 master plan embraces many of the principles behind the recently established LEED pilot program for Neighborhood Development system. The LEED Neighborhood Development (LEED ND) system:

- Revitalizes existing urban areas
- Reduces land consumption
- Reduces automobile dependence
- Promotes pedestrian activity
- Improves air quality
- Decreases polluted stormwater runoff
- Builds more livable communities for people of all income levels

### LEED for Neighborhood Development

Implementing best practices in sustainable design is key for the base to maintain its long standing commitment to conserve the natural beauty of the land and preserve its standing as one of America's enduring installations. The purpose of 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** - 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 of this document (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.

- **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.

### LEED Building 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 area.
- **Locate parking at the perimeter of area** along 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.

Each project greater than 20 acres should meet the requirements of the LEED ND certification based on the criteria established in the checklist. A sample checklist is included in Appendix D as a guide.

## Industrial Areas & LEED ND

Relocating existing industrial buildings and related uses to one centralized area allows for greater efficiency of the land for shared facilities and building designs to support multiple tenants (see Figure 5.1). Furthermore, a concentration of industrial users with more direct access to housing and retail services offered at the Town Center will promote sustainability through walking.

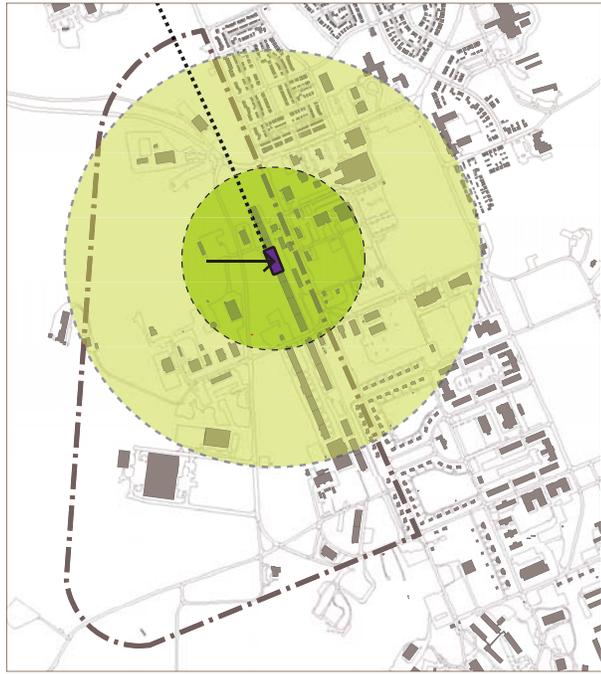
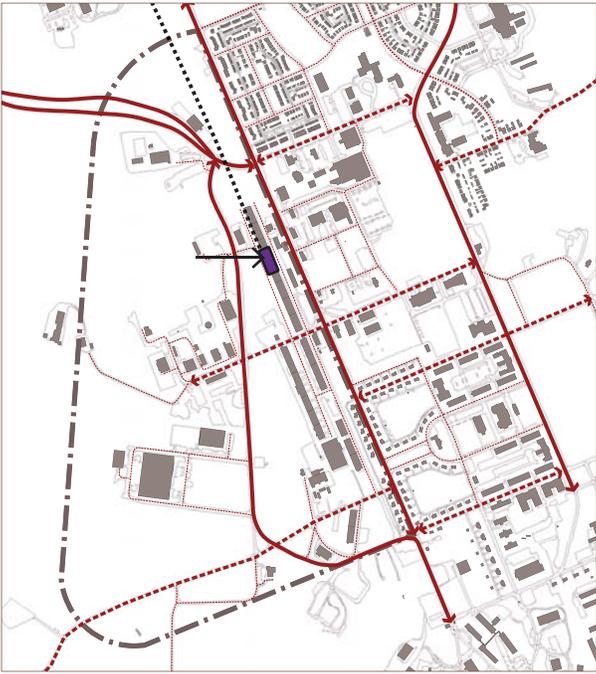
Some of the old warehouse buildings located in the industrial area are contributing to the historical character of Belvoir and may be reused for community serving uses such as the Kawamura Arts/Crafts and Auto Center. This center will be impacted with the future widening of Gunston Road and provides an appropriate transitional land use to the heavier industrial uses planned for the area.

The reuse of old buildings, particularly historic buildings rather than building new is an established sustainable practice. The degree that existing buildings in the industrial area can be reused will require a determination of the condition of the building and the cost to renovate them to meet specific tenant criteria. Alternate Plans A, B, and C all provide for the preservation and in some cases reuse of existing buildings to various degrees.

The concentration of industrial uses (referred to as “compact development” by LEED standards) also allows for more efficient site and building design that can improve air quality and reduce storm water runoff. The industrial area anticipates the use of public transit facilities including use of the abandoned rail line to reduce reliance on the automobile. All the Alternate Plans explore options for the reuse of the abandoned rail line for future public transit.



Figure 5.1 - Shared warehouse loading area concept. This example reduces land consumption and paved areas as recommended in the LEED pilot program Neighborhood Development System.

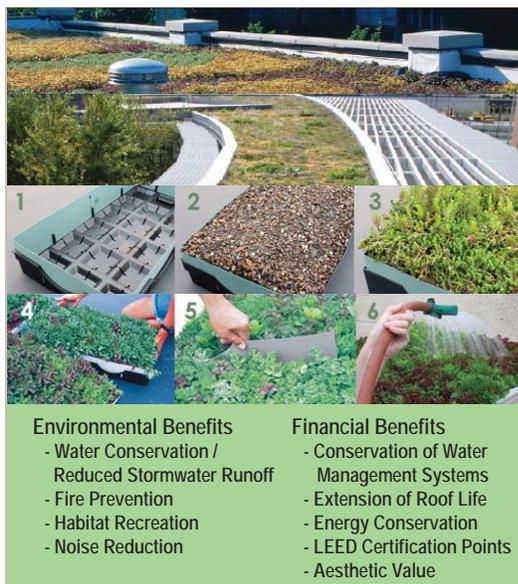


## 5.3 Sustainable Principles

The following are LEED standards relating to the Industrial Area and should be considered during the implementation phase:

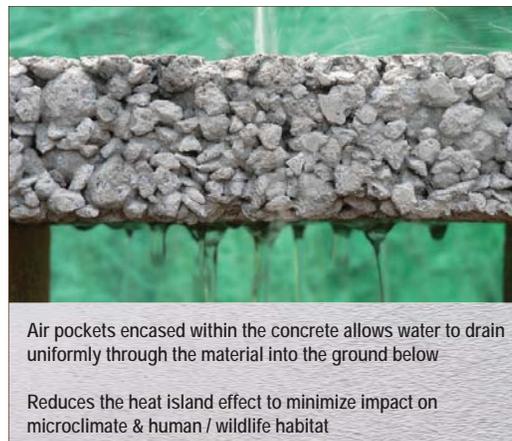
- Evaluate existing industrial facilities for continued use and reuse
- Evaluate new construction implementation methods for:
  - Green roofs on new large warehouse storage buildings (see Figure 5.6).
  - Erosion and sedimentation control
  - Fundamental building systems commissioning
  - Minimum energy performance
  - CFC reduction in HVAC&R equipment
  - Storage and collection of recyclables
  - Minimum Indoor Air Quality (IAQ) performance
  - Environmental Tobacco Smoke (ETS) control
  - Porous paving for surface parking (see Figure 5.7).

Figure 5.6 - Green Roof Systems



Source: LiveRoof System by LiveRoof, LLC  
[http://www.liveroof.net/pg/LiveRoof\\_System](http://www.liveroof.net/pg/LiveRoof_System) viewed on October 09, 2007

Figure 5.7 - Porous Concrete Material



Source: Porous concrete by TecEco  
<http://www.tececo.com/products.poreconcrete.php> viewed on October 09, 2007

- Enforce site planning strategies for new development that:
  - Reduce environmental impacts of surface parking (see Figure 5.7).
  - 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
- Identify suitable existing building facilities that can be renovated to meet the following sustainable principles:
  - Whole-building cleaning and maintenance issues, including chemical use
  - On-going indoor air quality
  - Energy efficiency
  - Water efficiency
  - Recycling programs and facilities
  - Exterior maintenance programs
  - Systems upgrades to meet green building energy, water, IAQ, and lighting performance standards

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

## 5.4 Land Use & Building Development Principles

Organize intensive heavy industrial uses (i.e. 249th Engineering Battalion (Prime Power)) towards open space areas to the south, and establish more office/community uses as a transitional zone on Gunston Road. These transitional zones are shown in Figure 6.1.

- Develop efficient street and open space patterns (i.e. street block) that can support multi-tenant “flex” warehouses and larger, single-user buildings.
- Utilize existing facilities wherever practical (includes infrastructure, utilities, road access, and renovation of existing buildings).
- Preserve abandoned railroad tracks for public transit use, and establish new pedestrian/ bicycle circulation routes that integrate with the Master Plan.
- Preserve Building 1124, the government gas station. This historic building is appropriately located, but has contamination issues in surrounding soils.
- Minimize paved areas through efficient use of parking, vehicular access, and outdoor loading areas. Incorporate green islands to reduce heat, glare and stormwater runoff.
- Minimize operational impacts on adjacent uses by creating landscape buffers between different uses.
- Integrate flexible planning solutions that accommodate unforeseen requirements of diverse users.
- Appropriate consolidation of Garrison Directorate of Logistics (DOL) and Directorate of Public Works (DPW) operations.
- Comply with UFC Criteria on security measures and stand-off requirements.
- Provide locations for near-term facilities in accordance with 1391 program requirements.

## 5.5 Transportation Principles

- To allow full build-out as outlined in the Master Plan, increase right-of-way to widen Theote Road into a four-lane, divided road.
- To facilitate traffic flow on Post, designate Theote Road a major collector, and then restrict local road and driveway access.
- To mitigate impacts to historic areas (such as Town Center and Gerber Village) and enhance security, restrict trucks and service vehicles to access site from Pohick Road and Tulley Gate.
- Improved traffic flow around the future urban core and Town Center includes the existing “ring road,” or Theote Road to 21st Street. To accommodate a full buildout, Theote Road should be widened to four lanes from Pohick Road to 16th Street, transitioning to two lanes by 21st Street. Ideally Theote Road should be rerouted south of Warren Road to 23rd Street since most of the traffic goes into the 300 Area. However, previous studies have shown that required bridging over a former coal trestle site would be cost prohibitive.
- To improve the flow of trucks in and out of the Industrial Area and minimize potential conflicts with the Master Plan, realign the Theote/ Pohick intersection. Presently, all trucks accessing Fort Belvoir (except for those destined for the DLA and D-CEETA buildings) are required to be screened at Tulley Gate.

# Planning Framework

## 6

### CHAPTER

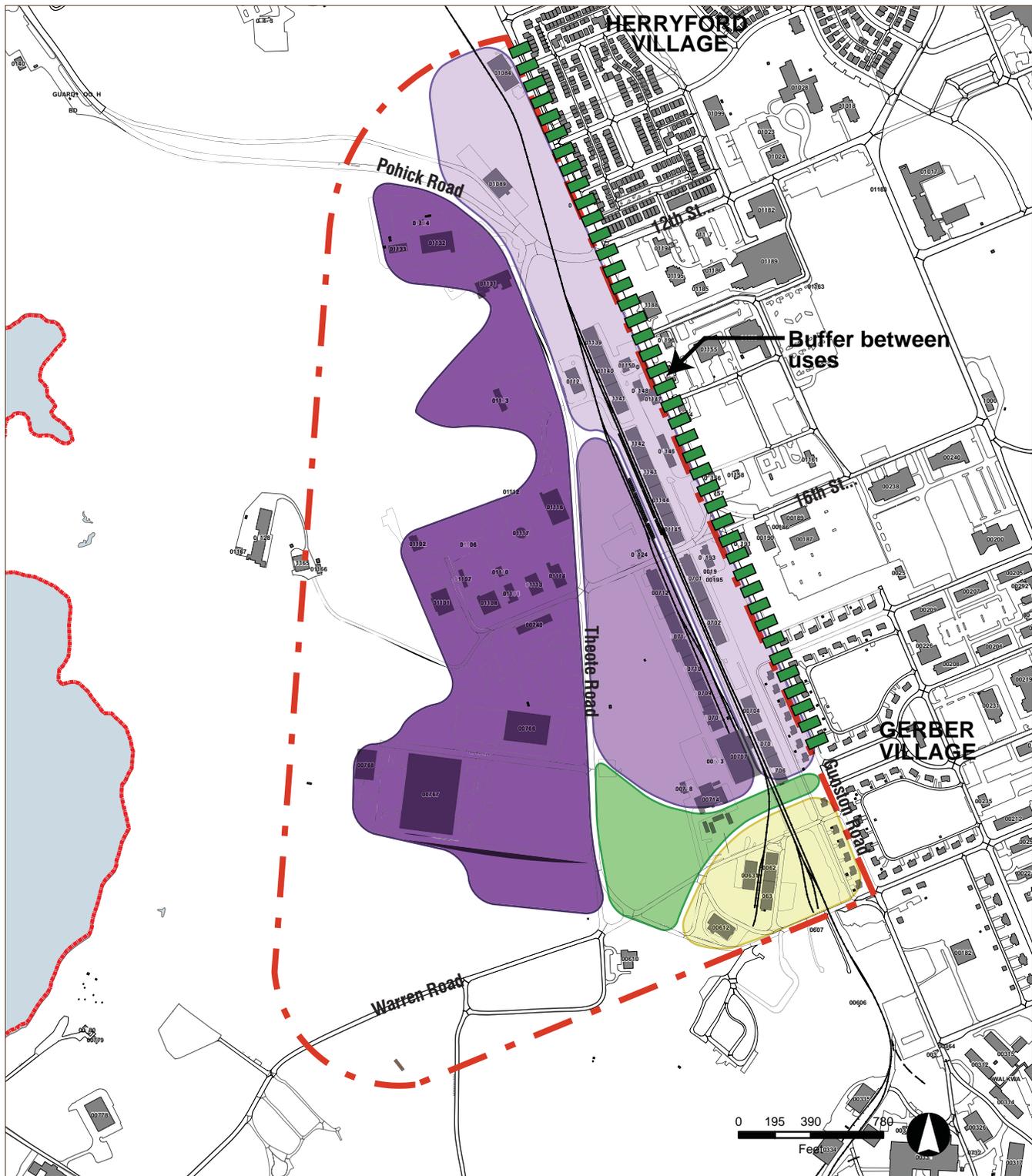
#### 6.1 Overview

Before arriving at the preferred plan, several alternatives are explored in order to ensure all implications of a siting decision were understood and different means of achieving the common planning principals were illustrated. 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. Evaluation criteria for the alternative plans is based on the planning principles which were discussed in Chapter 5. This criteria is further discussed in Chapter 7, Evaluation of Alternatives.

#### 6.2 Framework Plan Alternatives A, B, and C

All alternatives focus on creating three separate zones within the Industrial Area to facilitate a transition between adjacent land uses and industrial functions (see Figure 6.1). These zones are Transitional, Light Industrial, and Heavy Industrial – each one defined by building footprint sizes, functions, and a clear road hierarchy.

Figure 6.1 - Functional Land Use Diagram



- |             |  |   |   |
|-------------|--|---|---|
| Study Area  | Transitional Zone<br>- Community Support<br>- Office Uses<br>- Other | Light Industrial<br>- Warehouses<br>- Designed for Multiple Tenants<br>- Office Storage<br>- Office | Heavy Industrial<br>- Large Warehouses<br>- Single Users Requiring Large Space<br>- Outdoor Storage<br>- Assembly<br>- Motor Pools<br>- Shipping & Receiving<br>- Specialized Uses (i.e. Vet Clinic/Kenels) |
| Open Space  |  |   |   |
| Residential |  |   |   |

### **Alternative “A” Description:**

Organizing elements of this option are: the existing road network, which extends into the Industrial Area; the abandoned railroad; some existing buildings; open space; amenities for pedestrians and bicyclists; a transit hub; smaller warehouses ranging from 25,000 SF to 48,000 SF that are sited within close proximity to other warehouses to facilitate shared loading areas; and use of the larger, existing warehouses in good condition that can accommodate specific tenant requirements.

### **Program:**

Existing Buildings Maintained	610,350 SF
Existing Buildings Demolished	240,530 SF
Retained	369,820 SF
1391 & Planned Projects	340,811 SF
New Construction	481,968 SF
<b>Total</b>	<b>*1,192,599 SF</b>
Documented Program	1,140,619 SF
Future Expansion	51,980 SF

Future Expansion equals Total Construction less Documented Program Requirements

### **Motor Pool & Storage Area:**

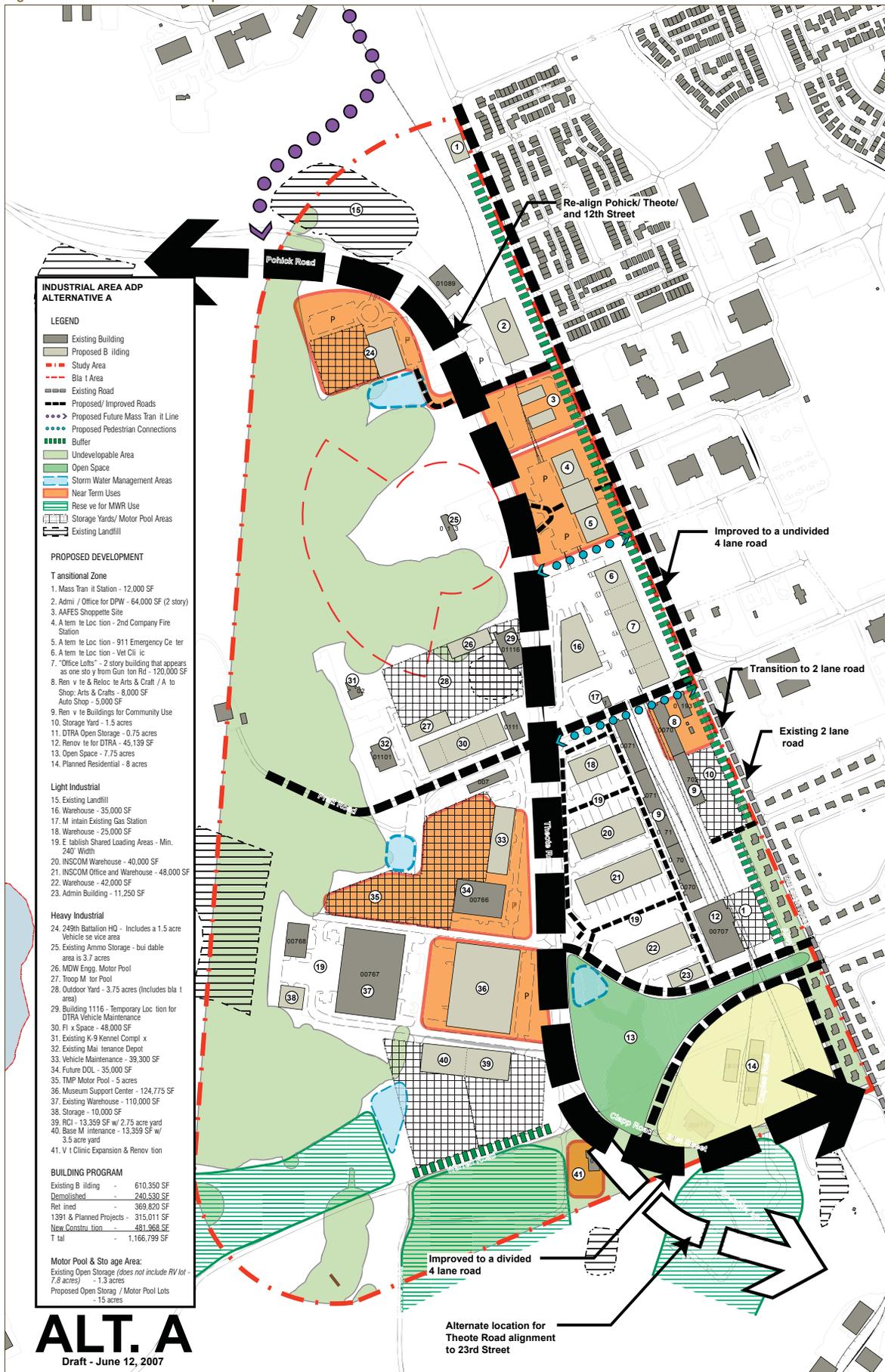
Existing Open Storage	1.3 acres
Proposed Open Storage	15 acres

*\* This does not include an additional 3.5 acres of buildable land within the explosive arc that could be used for outdoor storage or new construction.*

Table 6.1 - Pros & Cons for Option A

Pros	Cons
<b>Land Use &amp; Building Strategy</b>	
Buildings are arranged in a linear pattern, as dictated by major roadways and building sizes.	Existing landfill is planned for an outdoor storage area. Mitigation will be costly and lengthy.
Smaller buildings with multiple stories or “office lofts” are sited to accommodate a diversity of users and functions.	Maintaining the existing ammo storage facility reduces amount of developable area, thereby decreasing the ideal density.
Many existing facilities are planned for future use and renovation.	The location of the DTRA facility near community uses is not ideal.
Shared loading areas minimize paving.	
Community support functions, green buffers, and pedestrian-oriented frontage – sited along Gunston Road – manage a transition from the surrounding area to industrial functions.	
The new 249th Battalion headquarters and the relocated DPW building are sited at the intersection of Pohick and Theote Roads – a prominent location. These facilities will “greet” installation visitors.	
The vehicle maintenance shop and motor pool, Army Museum support facility, and Network Operations Center are located in the Heavy Industrial Area, away from conflicting adjacent land uses.	
Existing Veterinary Clinic is slated for renovation and expansion.	
<b>Transportation</b>	
The widening of Theote Road and Pohick Road into 4-lane, divided parkways improves access to Tulley Gate, eliminating heavy vehicle traffic from neighborhood streets.	Street improvements may conflict with existing facilities and functions.
Realignment of Theote Road and Pohick Road simplifies traffic patterns.	Mass transit line does not go near population concentrations.
Realignment of the 12th Street and Pohick Road intersection improves circulation.	
Extension of local streets – 16th, 19th, and 20th – to Theote Road improves circulation.	
Gunston Road is improved to a 4-lane, undivided road.	
Right-of-way along the abandoned railroad track is preserved for possible use as a busway and biker/hiker trail in the short term, and as a light rail in the long term.	
Proposed transit stop along Gunston Road will provide access to the Industrial Area.	
<b>Program</b>	
All proposed projects are sited in the development plan, including 1391 and long-range projects.	
<b>Environmental/Sustainable</b>	
Building 1124 is maintained, because it is historic and site mitigation for new development would be costly.	Some impact and cleanup will likely be required.
Preserves riparian buffer areas. See item 13 in legend of Figure 6-1.	Impacts existing landfill near building 1116.
Does not impact 2 existing landfills to the north and south.	240,530 SF of potential reusable buildings are demolished

Figure 6.2 - Alternate A Conceptual Plan



**Alternative “B” Description:**

Organizing elements in this alternative are the same as in “A”. However, this option places more emphasis on integrating various modes of transportation into the development pattern (See Figure 6.3). Zone boundaries are clearly demarcated by roads and trails. This option also: factors in prescribed force protection stand-off distances from roads and buildings; better integrates parking; and better incorporates open storage requirements. Unlike “A”, it also plans for much larger warehouses up to 125,000 SF. Few existing buildings are preserved in this alternative.

**Program:**

Existing Buildings Maintained	610,350 SF
Existing Buildings Demolished	379,369 SF
Retained	230,981 SF
1391 & Planned Projects	340,811 SF
New Construction	556,226 SF
<b>Total</b>	<b>1,128,018 SF</b>
Documented Program	1,140,619 SF
Deficit	12,601 SF

Future Expansion equals Total Construction less Documented Program Requirements

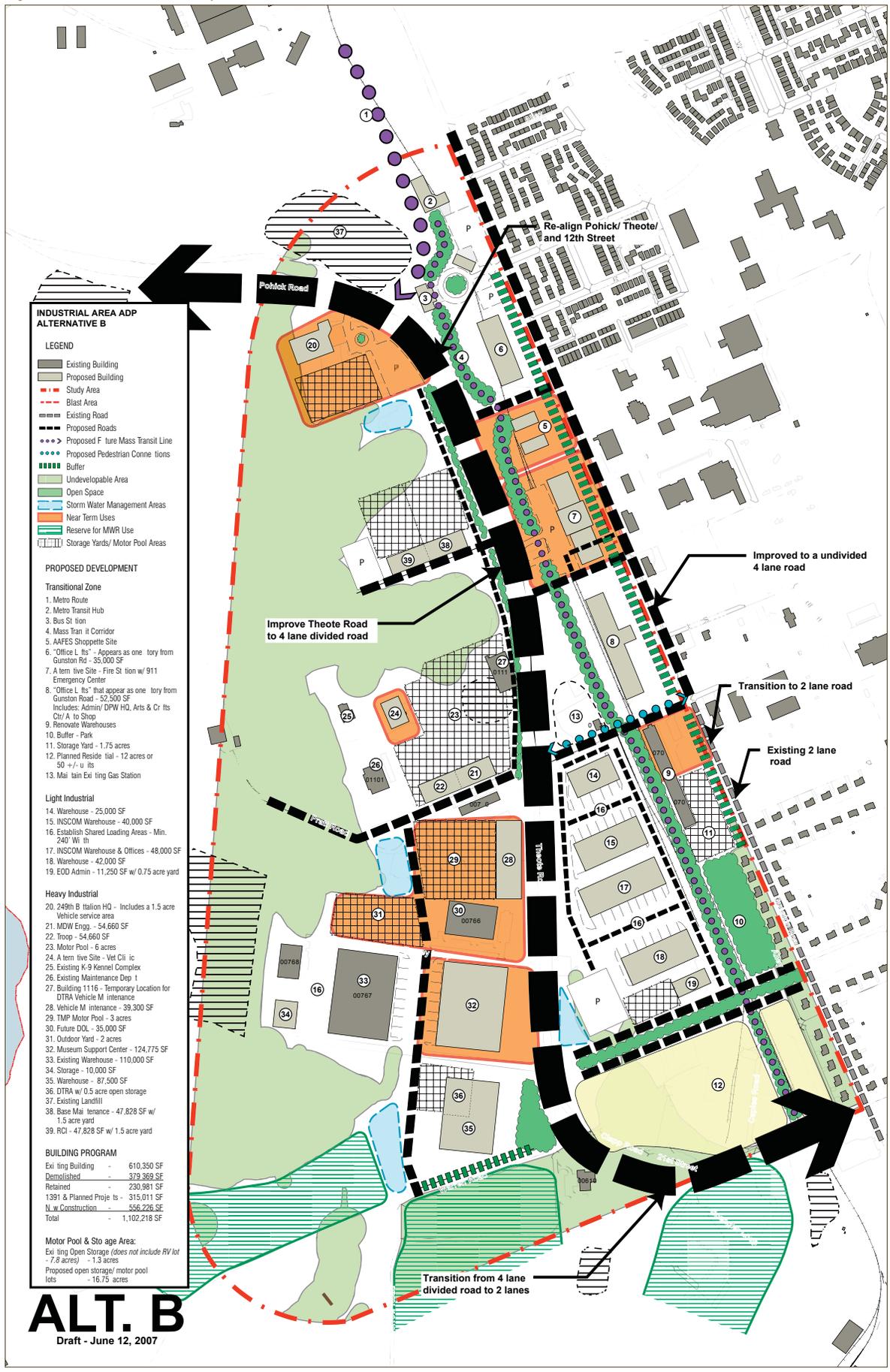
**Motor Pool & Storage Area:**

Existing Open Storage	1.3 acres
Proposed Open Storage	16.75 acres

Table 6.2 - Pros & Cons for Option B

Pros	Cons
<b>Land Use &amp; Building Strategy</b>	
Buildings are arranged in linear patterns, as dictated by major roadways and building sizes.	Existing landfill is planned for an outdoor storage area. Mitigation will be costly and lengthy.
Smaller buildings with multiple stories or “office lofts” are sited to accommodate a diversity of users and functions.	Existing ammo storage facility is not maintained, and must be relocated to the southwest area of the installation.
Shared loading areas minimize paving.	Few existing buildings are retained.
Community support functions, green buffers, and pedestrian oriented frontage – sited along Gunston Road – manage a transition from the surrounding area to industrial functions.	Loss of recycling center (building 1089). Potential relocation within Industrial Area.
The new 249th Battalion headquarters is sited at the intersection of Pohick and Theote Roads – a prominent location. This facility will “greet” installation visitors.	
A greater number of larger warehouses are located in the Heavy Industrial Area to accommodate multiple tenants.	
Building 1124 is maintained, because it is historic and site mitigation for new development would be costly.	
Existing Veterinary Clinic is relocated to a larger site.	
<b>Transportation</b>	
The widening of Theote Road and Pohick Road into 4-lane, divided parkways improves access to Tulley Gate, eliminating heavy vehicle traffic from neighborhood streets.	Street improvements may conflict with existing facilities and functions.
Realignment of Theote Road and Pohick Road simplifies traffic patterns.	
Realignment of the 12th Street and Pohick Road intersection improves circulation.	
Extension of local streets – 16th, 19th, and 20th – to Theote Road improves circulation.	
Gunston Road is improved to a 4-lane, undivided parkway.	
Right-of-way along the abandoned railroad track is used as a biker/hiker trail in the short term, and as a light rail in the long term.	
Proposed transit stop along Gunston Road will provide access to the Industrial Area.	
<b>Program</b>	
All proposed projects are sited in the development plan, including 1391 and long-range projects.	
<b>Environmental/Sustainable</b>	
Building 1124 is maintained, because it is historic and site mitigation for new development would be costly.	Some impact and cleanup will likely be required.
Does not impact two existing landfills to the north and south.	Impacts existing landfill near building 1116.
	379,369 SF of potential reusable buildings are demolished.
	Impact to riparian buffer areas by a parking area and circulation.

Figure 6.3 - Alternate B Conceptual Plan



**INDUSTRIAL AREA ADP  
ALTERNATIVE B**

**LEGEND**

- Existing Building
- Proposed Building
- Study Area
- Blast Area
- Existing Road
- Proposed Roads
- Proposed Future Mass Transit Line
- Proposed Pedestrian Connections
- Buffer
- Undevelopable Area
- Open Space
- Storm Water Management Areas
- Near Term Uses
- Reserve for MNR Use
- Storage Yards/ Motor Pool Areas

**PROPOSED DEVELOPMENT**

**Transitional Zone**

1. Metro Route
2. Metro Transit Hub
3. Bus Station
4. Mass Transit Corridor
5. AAFFS Shoppette Site
6. "Office L. Its" - Appears as one lot only from Gunston Rd - 35,000 SF
7. A term live Site - Fire Station w/ 911 Emergency Center
8. "Office L. Its" that appear as one lot only from Gunston Road - 52,500 SF  
Includes: Admin/DPW HQ, Arts & Cr Its, Ctr/A to Shop
9. Renovate Warehouses
10. Buffer - Park
11. Storage Yard - 1.75 acres
12. Planned Residential - 12 acres or 50 +/- units
13. Main train Existing Gas Station

**Light Industrial**

14. Warehouse - 25,000 SF
15. INSCOM Warehouse - 40,000 SF
16. Establish Shared Loading Areas - Min. 240' W. th
17. INSCOM Warehouse & Offices - 48,000 SF
18. Warehouse - 42,000 SF
19. EOD Admin - 11,250 SF w/ 0.75 acre yard

**Heavy Industrial**

20. 249th Battalion HQ - Includes a 1.5 acre Vehicle service area
21. MDW Engg. - 54,650 SF
22. Troop - 54,660 SF
23. Motor Pool - 6 acres
24. A term live Site - Vet Clinic
25. Existing K-9 Kennel Complex
26. Existing Maintenance Dept
27. Building 1116 - Temporary Location for DTRA Vehicle Maintenance
28. Vehicle Maintenance - 39,300 SF
29. TMP Motor Pool - 3 acres
30. Future DOL - 35,000 SF
31. Outdoor Yard - 2 acres
32. Museum Support Center - 124,775 SF
33. Existing Warehouse - 110,000 SF
34. Storage - 10,000 SF
35. Warehouse - 87,500 SF
36. DTRA w/ 0.5 acre open storage
37. Existing Landfill
38. Base Maintenance - 47,828 SF w/ 1.5 acre yard
39. RCI - 47,828 SF w/ 1.5 acre yard

**BUILDING PROGRAM**

Existing Building	- 610,350 SF
Demolished	- 373,369 SF
Retained	- 230,981 SF
1391 & Planned Projects	- 315,011 SF
N. w. Construction	- 556,226 SF
<b>Total</b>	<b>- 1,102,218 SF</b>

**ALT. B**  
Draft - June 12, 2007

**Alternative “C” Description:**

This option explores the capacity of the Industrial Area by siting as many large standard footprint warehouses as possible, while maintaining prescribed force protection stand-off distances and optimum circulation (see Figure 6.3). It was concluded that seven typical, 125,000-SF warehouses could be integrated. Each would be subdivided to accommodate various user needs. This eliminates the Light Industrial zone. A few existing buildings are preserved in this alternative.

**Program:**

Existing Buildings Maintained	610,350 SF
Existing Buildings Demolished	344,750 SF
Retained	265,600 SF
1391 & Planned Projects	340,811 SF
New Construction	790,500 SF
<b>Total</b>	<b>1,396,911 SF</b>
Documented Program	1,140,619 SF
Future Expansion	256,292 SF

Future Expansion equals Total Construction less Documented Program Requirements

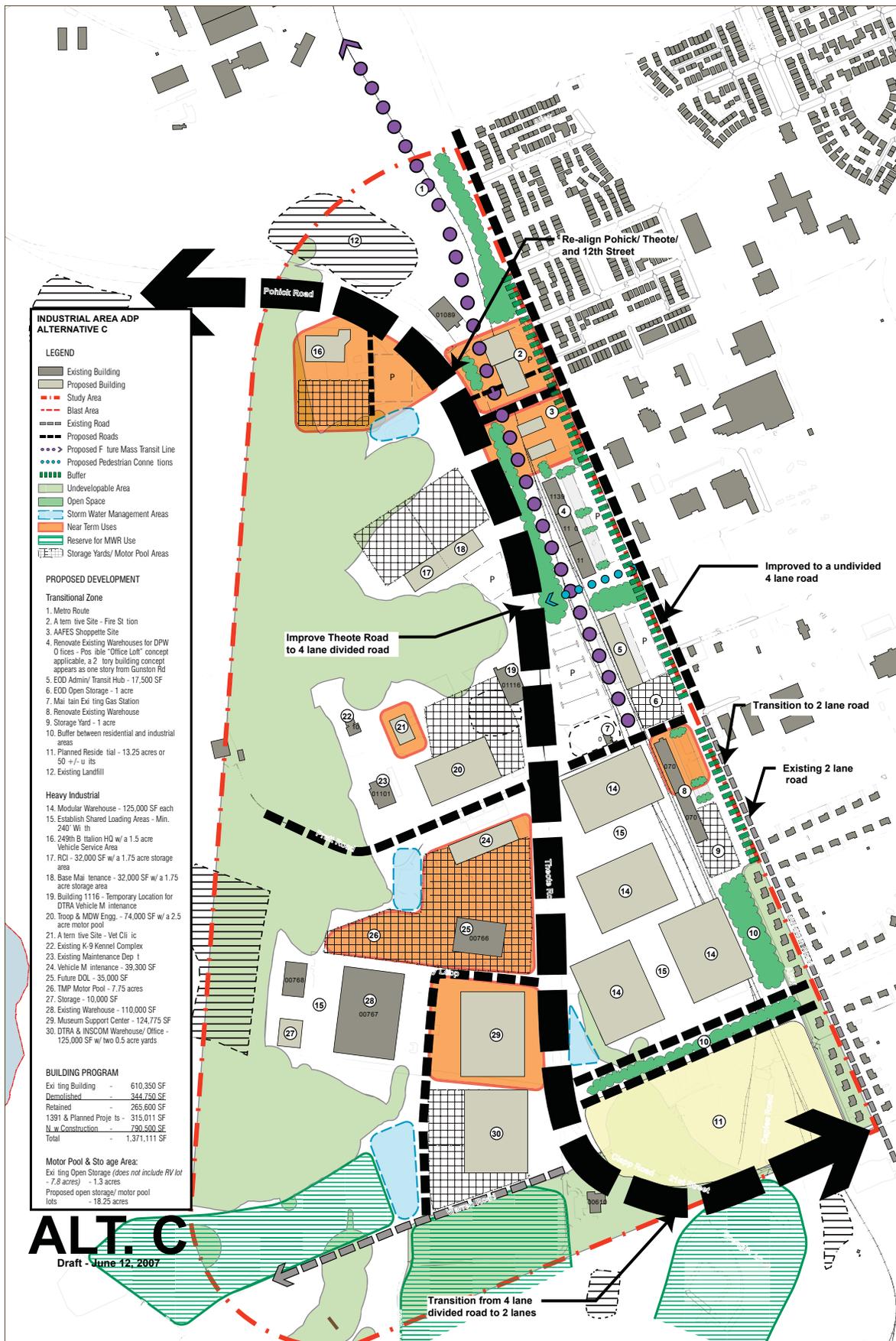
**Motor Pool & Storage Area:**

Existing Open Storage	1.3 acres
Proposed Open Storage	17.25 acres

Table 6.3 - Pros & Cons for Option C

Pros	Cons
<b>Land Use &amp; Building Strategy</b>	
Smaller buildings with multiple stories or “office lofts” are sited to accommodate a diversity of users and functions.	Existing landfill is planned for an outdoor storage area. Mitigation will be costly and lengthy.
Shared loading areas minimize paving.	Existing ammo storage facility is not maintained, and must be relocated to the southwest area of the installation.
Community support functions, green buffers, and pedestrian oriented frontage – sited along Gunston Road – manage a transition from the surrounding area to industrial functions.	Few existing buildings are retained.
The new 249th Battalion headquarters is sited at the intersection of Pohick and Theote Roads – a prominent location. These facilities will “greet” installation visitors.	Numerous large warehouses will eliminate the Light Industrial Area.
A greater number of larger warehouses are located in the Heavy Industrial Area to accommodate multiple tenants.	
Building 1124 is maintained, because it is historic and site mitigation for new development would be costly.	
Existing Veterinary Clinic is relocated to a larger site.	
<b>Transportation</b>	
The widening of Theote Road and Pohick Road into 4-lane, divided parkways improves access to Tulley Gate, eliminating heavy vehicle traffic from neighborhood streets.	Street improvements may conflict with existing facilities and functions.
Realignment of Theote Road and Pohick Road simplifies traffic patterns.	
Realignment of the 12th Street and Pohick Road intersection improves circulation.	
Extension of local streets – 16th, 19th, and 20th – to Theote Road improves circulation.	
Gunston Road is improved to a 4-lane, undivided parkway.	
Right-of-way along the abandoned railroad track is used as a biker/ hiker trail in the short term, and as a light rail in the long term.	
Proposed transit stop along Gunston Road provides access to the Industrial Area.	
<b>Program</b>	
All proposed projects are sited in the development plan, including 1391 and long-range projects.	
<b>Environmental/Sustainable</b>	
Building 1124 is maintained, because it is historic and site mitigation for new development would be costly.	Some impact and cleanup will likely be required.
Does not impact 2 existing landfills to the north and south.	Impacts existing landfill near building 1116.
	379,369 SF of potentially reusable buildings are demolished.
	Impact to riparian buffer areas by proposed building. See item 14 in legend of Figure 6-3.

Figure 6.4 - Alternate C Conceptual Plan



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# Evaluation of Alternatives

## 7.1 Evaluation Criteria

Each of the three alternatives were evaluated on criteria established from material in Chapter 5, Planning Principles. The criteria are broken into five categories:

- Building program
- Motor pool/ outdoor storage
- Land use and building strategy
- Transportation
- Sustainability

Specific criteria and ratings are listed in the evaluation matrix (see Table 7.1).

## 7.2 Evaluation Matrix

Table 7.1 - Evaluation Matrix			
Criteria	A	B	C
<b>Building Program</b>			
Existing Buildings	610,350 SF	610,350 SF	610,350 SF
Existing Buildings Demolished	240,530 SF	379,369 SF	344,750 SF
Retained	369,820 SF	230,981 SF	265,600 SF
1391 & Planned Projects	340,811 SF	340,811 SF	340,811 SF
New Construction	481,968 SF	556,226 SF	790,500 SF
Total	1,192,599 SF	1,128,018 SF	1,396,911 SF
Documented Program	1,140,619 SF	1,140,619 SF	1,140,619 SF
Future Expansion	51,980 SF	-12,601 SF	256,292 SF
<b>Motor Pool/Outdoor Storage</b>			
Existing	1.3 acres	1.3 acres	1.3 acres
Proposed	15 acres	16.75 acres	18.25 acres
<b>Land Use &amp; Building Strategy</b>			
Locate Heavy Industrial uses near open space areas to the south.		■	
Locate Office and Community uses in the transitional zone along Gunston Road.	■		
Incorporate efficient street patterns (i.e. street block) to support opportunities for multi-tenant "flex" warehouse and larger single-user buildings.	■		
Renovate existing facilities – includes infrastructure, utilities, and road access.	■		
Preserve abandoned railroad tracks for public transit use.		■	
Establish new pedestrian/bike circulation routes that integrate with the Master Plan.		■	
Preserve Building 1124, the government gas station.	■	■	■
Minimize paved areas through more efficient use of parking, vehicular access, and outdoor loading areas.			
Incorporate green islands to reduce effects of heat, glare, and stormwater runoff.			■
Minimize operational impacts on adjacent uses by creating landscape buffers between different uses.	■		
Integrate flexible planning solutions to accommodate unforeseen requirements of diverse users.		■	
<b>Transportation</b>			
To allow full build-out as outlined in the Master Plan, increase right-of-way to widen Theote Road into a four-lane, divided road.	■	■	■
To facilitate traffic flow on-Post, designate Theote Road a major collector, and then restrict local road and driveway access.	■	■	■
To mitigate impacts to historic areas (such as Town Center and Gerber Village) and enhance security, restrict trucks and service vehicles to access site from Pohick Road and Tulley Gate.	■	■	■
<b>Sustainability</b>			
LEED ND	■		

Note: "■" denotes that the criteria is achieved best

## 8.1 Overview

After discussions with the Fort Belvoir Garrison Staff, affected tenants, and users of the Industrial Area, the preferred alternative was developed (see Figure 9.3 & 9.4) taking the best aspects of the three previously drawn alternatives and discarding those aspects in the three alternatives that proved to have deficiencies.

The general concept of dividing the Industrial Area into three land use zones was widely accepted and supported as guidance in the planning open house meeting. The three areas are a transitional zone between Gunston Road and the original railroad line, creating a buffer from the town center and residential facilities to industrial purposes, light industrial activities west of the railroad trace to Theote Road, and heavy industrial activities west of Theote Road (see Figure 6.1).

### Fixed Assets

While the plan allows flexibility for future uses, certain existing activities and facility would be difficult to relocate and/or redevelop due to their operation and are presently fixed and should remain so at this time. These facilities include:

- **AAFES Shoppette with gas** - After a great deal of study and consideration of alternate locations, the AAFES Shoppette with gas facility was sited between Pohick Road, Theote Road, and Gunston Road. A construction award is expected for this facility in FY 2010. The facility is compatible with facilities and functions that should be in the buffer zone of the Industrial Area.
- **Site of 249th Engineer Battalion (Prime Power)** - The 249th Engineer Battalion headquarters and operations area is sited along the southwest edge of the intersection of Pohick Road and Theote Road. This site is currently used by the Prime Power School which is moving to Fort Leonard Wood, Missouri. The 249th Engineer Battalion will consolidate all of its battalion and company activities in this location, demolishing and replacing the existing deteriorating buildings on the site. The Battalion has a high noise component in the maintenance, receipt, and shipment of its inventory of power generators, and should be located in the heavy industrial area west of Theote Road. It appears logical for the battalion to take over and continue to use a site where its school is currently located with a similar existing operation.
- **Building 1124 and petroleum, oils, and lubricants (POL) dispensing operations-** Located along 16th Street, this facility is centrally located and is adjacent to planned motor pool operations in the heavy industrial area. It is easily accessible to other activities on the installation for refueling government owned vehicles. Aside from this, the area currently maintains a corrective active program for environmental cleanup and may still be contaminated with POL spillage or leakage and should be left in its present use.
- **Tracy Loop warehouses and the Museum Support Center** - Buildings 766, 767, and 768 were constructed in 1994 as part of a previous BRAC law. They are among the newest facilities in the Industrial Area and should be retained. A fourth building was planned to be constructed along with these three buildings, but it was never completed. The Museum Support Center fits well on the site of this fourth facility, and design is presently underway at this location.

- **Dog Kennel** - Building 1102 is the newest facility in the Industrial Area, completed in 2004. It is appropriately located in an isolated area adjacent to existing woodlands in the back of the Industrial Area. It is compatible with other activities in the Industrial Area.

Facilities that presently exist in the Industrial area or are currently sited in this area and should remain in their current locations include:

- **Recycling Center** - This facility (building 1089) is located north of Pohick Road. It is easily accessible to many patrons who drop off recyclable materials. The pre-WWII facility is concrete block construction with a raised ceiling to accommodate a large, noisy bailer inside. There is a landfill behind the building a portion of which lies under a composting and mulching operation which is another type of recycling activity. After due consideration of alternate locations for the recycling center, it appeared logical to keep the recycling operation in its existing location.
- **Building 193** - This 1934 brick facility is on the southwest corner of 16th Street and Gunston Road. Among other operations in the facility is the video-teleconferencing center (VTC) for Fort Belvoir which includes considerable communications infrastructure. The three-story facility is surrounded on three sides by an embankment. A replacement facility would have approximately the same dimensions as the existing facility in addition to considerable earthwork effort; therefore, it does not appear economically feasible to relocate this facility. Also, current use of the facility is fully compatible with the buffer/transition uses of this area.

- **Veterinary Clinic** - Building 610 is in the extreme south end of the Industrial Area. The facility was constructed in 1993, making it one of the newer facilities in the Industrial Area. Currently there are plans to add an extension to this facility to accommodate increased mission responsibilities. It is away from other industrial activities, all of which are located north of Warren Road. It is compatible with other surrounding activities which include MWR recreational activities planned on both eastern and western sides. Considering the condition of the facility and the proposed planned expansion, it is not necessary to consider any alternate locations for veterinary operations.

### Assets that Should Move

Most of the remaining assets in the Industrial Area should be demolished, removed, or replaced. They include:

- **Recreational Vehicle Storage Lot** - This facility is an eyesore and an inefficient use of valuable real estate in the heart of Fort Belvoir. MWR is making plans to move it north of the North Post Golf Course; however, the location is not confirmed or reflected in the MWR Recreation Plan.
- **Ammunition/explosives storage bunkers, Building 1123** - While this facility is relatively new ( 2003), explosive safety distant regulations restrict land uses around it. Consideration should be given to remove it to the more open space of the Southwest Area and replace it with motor pool and heavy maintenance activities that need to be closer to and supporting other activities on the installation.
- **World War I & II railroad warehouses-** These facilities, while some are listed as historic, are old, inefficient, obsolete, and in many cases deteriorating. Their original function, to warehouse materials coming onto the installation by rail, has ended with the closure and removal of railroad tracks on Fort Belvoir. Those facilities that are not historic should be demolished and replaced with modern facilities.

- Historic structures and buildings may not be demolished and replaced until after complete environmental documentation has been prepared. The warehouses in this category should be considered for adaptive reuse if at all feasible. If adaptive reuse is not feasible and the real estate space is determined to be more valuable for other purposes, these facilities should be properly documented and demolished.
- **Building 707** - This facility was originally constructed to house and maintain the railroad engines on Fort Belvoir. With the closure of railroad activities on the installation, it has been converted to a vehicle maintenance facility. It is energy inefficient, deteriorating, and should be replaced.
- **Building 714 and neighboring facilities-** This “Cold War” facility has been used for various administrative functions. It is currently used as a records storage depot for CIDC. While that function was not transferred to Quantico Marine Base under the latest Base Realignment and Closure Act, consideration should be given to eventually transferring it with other CIDC activities. The mission has grown so large that CIDC has had to move in a number of relocatable units in order to enlarge its storage capacity. These are temporary facilities and should be replaced with permanent construction. If moving the activity to Quantico is not possible, then the entire activity should be moved to a new warehouse large enough to support its entire storage requirement under one roof.
- **Building 612** - This facility has been variously used as a print plant, administrative facility, intelligence operation, and currently an Army Reserve facility. It has exceeded its design life and should be replaced.

- **Residential Community and Base Maintenance Activities along 16th Street-** Most of these facilities have exceeded their design life and should be replaced.
- **South of the 249th Engineer Battalion site-** This portion of the Industrial Area has been closed because of PCB contamination. This site should be decontaminated and the are should be used for stormwater retention and control in order to maximize use of the rest of the Industrial Area. A previous effort to decontaminate the area was tried, however; and when the extent and cost became clear, sealing off the area was chosen. Another study might bring a similar result and decision.

## 8.2 Preferred Alternative

(Figures 9.3 & 9.4)

Theote Road retains its present alignment and acts as a boundary between light industrial activities to the east and heavy industrial activities to the west. While Theote Road through the Industrial Area can remain in its present two lane condition, planning to reserve right-of-way to allow for the future widening is necessary in the event that full expansion or buildout of the post ever be required, east-west circulation into and through the Industrial Area will be by secondary roads at 12th Street, 16th Street, 19th and 20th Streets between Gunston Road and Theote Road. 12th Street will extend from Gunston Road to the intersection of Pohick and Theote Roads. 16th Street crosses Theote Road and extends to access the heavy industrial zone. 19th Street will align with a 4-way intersection at Theote Road and the north entrance of Tracy Loop. 20th Street will align with a 4-way intersection at Theote Road and Warren Road. These east-west connecting streets will include walkways to enhance pedestrian movement to the Town Center. The space between 19th and 20th Streets will be open buffer incorporating riparian and storm water management features.

## Recommended Site Locations

The preferred alternative supports the concept of activities transitioning from the buffer zone along Gunston Road to light industrial activities, then to heavy industrial activities toward the western edge of the area.

Recommended site locations, going from north to south by zone, are:

### **Buffer Zone:**

- New DPW building (northwest of corner of Pohick Road and Gunston Road)
- AAFES Shoppette with Gas
- Fort Belvoir Credit Union
- Office/retail facilities
- South Post Fire Station (northwest of corner of 16th Street and Gunston Road)
- Building 193
- Kawamura Arts, Crafts, and Self-help Auto Repair relocation
- Buffer between Gerber Village and light Industrial zone
- Open space between 19th and 20th Streets.
- Additional residential housing (south of 20th Street to 21st Street)

### **Light Industrial Zone:**

- Recycling Center (north of Pohick Road)
- Green space between buffer zone and Theote Road.
- Surface Parking lot.
- Building 1124 and POL dispensing facility (north of 16th Street)
- Installation remote delivery and inspection facility (south of 16th Street)
- Warehouse facilities oriented roughly east-west with loading docks on north and south sides. This presents a more aesthetically pleasing, narrower edge-on face to the buffer zone rather than loading docks and massive walls.
- Extension of 19th Street from Gunston Road, curving to an intersection with Theote Road and the north entrance to Tracy Loop. This defines the northern edge of an open space extension from Gerber Village to a riparian and storm water management area.
- Extension of 20th Street from Gunston Road, curving to an intersection with Theote Road, 21st Street, and Warren Road. This defines the southern edge of the open space.
- Additional residential housing (as described in the buffer zone list, above.)

### **Heavy Industrial Zone:**

- 249th Engineer Battalion (Prime Power) Headquarters and operations area (southwest of intersection of Pohick Road and Theote Road)
- Storm water management (after decontaminating PCB spill area)
- Base Maintenance and Residential Communities operations
- Undevelopable environmentally sensitive area
- Motorpools, potentially for other troop requirements moved from North Post. West of the motor pools are the working dog kennels, dog training area, and electronic equipment maintenance building (building 1101) (all north of 16th Street)
- DOL operations and TMP motor pool (includes building 766)
- Existing warehouses (buildings 767 and 768) and Museum Support Facility (on Tracy Loop)
- Large warehouse, potentially for INSCOM and DTRA (north of Warren Road)

## 8.3 Relationship to Long Range Development Plan

The Fort Belvoir LRC strives to develop the Post as a number of walkable neighborhoods, with a rich program of uses in each cluster. Strategies to enhance walkability include: encouraging compact development, increasing connectivity between clusters and neighboring land uses, providing active uses on the ground floor, and paying special attention to streetscapes and interconnected open spaces. Respect for historic facilities and environmentally sensitive areas are also important principles guiding this development.

Development of the Industrial Campus will also adhere to these important guiding principles, specifically:

- Increase the 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 (e.g. the fire station)
- Increase diversity of functions within each – to allow for a gradual transition between land use clusters and create better efficiency of the land and more visually appealing environments (The proximity of the Industrial Area to the Town Center and historic Gerber Village area would be a concern without this buffer of more compatible uses).

The Industrial Area includes the abandoned railroad yards and associated tracks that run the entire length of the site along Gunston Road. These tracks and related right-of-ways connect the site to the Metro/VRE station at Franconia/Springfield. This right-of-way is an incredibly valuable asset to support the vision of walkable communities. It can be developed in the interim as a pedestrian/bicycle trail. This would encourage Metro or VRE commuters to walk or bike to work, while creating new connections between the Industrial and other Fort Belvoir clusters. The right-of-way could also be potentially developed into a busway or light rail connection to the Metro/VRE station as the population of the installation increases. Recognizing future growth demands, space is allocated for an Industrial Area transit station that will service the campus and Town Center located across Gunston Road.

Because the Industrial Area is conveniently located with an easy access to Tulley Gate via Theote Road and Pohick Road, heavy traffic (trucks and service vehicles) can be restricted from entering the Town Center, residential clusters, historic areas, or densely developed areas. The proposed loop road – comprised of Pohick Road, Theote Road, and 21st Street (or even up to 23rd Street) – will serve as a collector for traffic from the 300-area, Tompkins Basin, Gerber Village, the Town Center, and the Industrial Area. This further facilitates access to Tulley Gate. This loop road will pass through the center of the Industrial campus, and will require buffering from unsightly facilities to create an attractive, pleasant drive.

## Impacts of Surrounding Land Uses

Because Tulley Gate is the designated entrance for visitors and service vehicles, the developed northern part of the Industrial Area is their first impression. Design of this area must welcome visitors and reflect the quality and standard of a world-class installation.

Land uses surrounding the Industrial Area are fairly diverse, and include: residential, commercial, and recreational land uses. Gunston Road is the watershed for a number of land use clusters. It divides the Industrial Area from: the Town Center, low-density residential at historic Gerber Village, and higher-density residential at Herryford Village. Gerber Village overflows across Gunston Road, with one row of existing housing located within the Industrial ADP study area. There is a good quality buffer of vegetation along Lowen Road that shields the historic village from existing industrial uses. The southern portion of the study area is proposed to be developed in the long-term as a medium-density residential extension of Gerber Village, under the Residential Communities Initiative (RCI). Recreational fields are proposed in the area currently used to store firewood to the south of this development. The Tompkins Basin Recreational Area is located along Warren Road, southwest of the Industrial Area.

This Industrial Area is one of the major planned employment centers for South Post. Community services - located in the Town Center and within walking distance of the Industrial Area - will support the campus. Within this center and in the surrounding clusters and residential areas, visual and pedestrian connections will be developed to create a sense of place.



*Herryford Village*



*Tompkins Basin recreation area*

# Implementation

## 9

### CHAPTER

Redevelopment of the Industrial Area allows the establishment of new projects such as the museum support center and the relocation of existing industrial projects that will be displaced by construction of the BRAC projects. The migration and timing of new and displaced uses to the Industrial area are called out in the Short Range Component and are also described in the Master Plan and ADPs. As a result of the staggered timing of the projects and due to availability of funding for some of the programmed projects, it will take many years to complete the industrial area. Recognizing that development will occur over time, this section presents recommendations for the phasing of near term programmed projects and establishes the framework for long-term redevelopment of the industrial area.

## 9.1 Phasing and Funding

### Near Term (2030) Development Strategy

Project phasing and funding sources for facilities within the industrial study are broken out by fiscal year (FY) beginning in 2008 and continuing to FY 2014. (See Chapter 4 of the January 2008 SRC) These programmed projects include:

- FY 2010 - Shoppette with Gas, Burger King and Car Wash
- FY 2008 - Museum Support Center
- FY 2014 - Battalion Headquarters for 249th Battalion

Other programmed projects not yet identified in the Future Years Defense program but noted in the SRC include the following:

- Replace the 1400/1900 Warehouses in Troop Village Area and North Post Areas with modern facilities (project # 57498) (FY 2015)
- Vet Clinic addition to existing veterinary clinic on South Post (project # 62539) (FY 2015)
- Installation Industrial Support Center (project # 50356) for DPW warehouse and motor pool (FY 2014)
- Vehicle Maintenance Shop (project #61457) to replace TMP motor pool (FY 2015)
- Arts/Crafts/Auto (project #65139) – Note this project was planned as a renovation and expansion of the existing Kawamura facility; however, the widening of Gunston road to begin in FY 2008, restricts further expansion; therefore, a new location for the facility is shown in Figure 9.2 along Gunston Road.

Facilities to be moved or demolished:

- Relocate the Recreational Vehicle Storage Lot
- Demolish WWII warehouses buildings 01144 and 01145 and associated parking lot for South Post fire station
- Demolish buildings 00714 and 00718 for replacement warehouses for 1400/1900 block.
- Relocate temporary storage canopies and demolish paved areas within the RCI leased area south of 16th street for future Vehicle maintenance shop

Note: The demolition of the WWII warehouse buildings would be required by FY 2014 for construction of the fire station, the timing for the demolition for the other buildings are based on future demands and the exact time frame is unknown.

#### Site Constraints

- Demolition of railroad warehouses, some of which are considered historic will require appropriate documentation and may require mitigation.
- Demolition and redevelopment of industrial land may require environmental cleanup based on the numerous SWMUs and PSAs/PRs that are scattered throughout the industrial area (see Figure 3.4). The extent of the impacts to these areas and cleanup required will be determined with a more complete definition of the site project boundary.

#### Roads & Utilities

No new roads or utility improvements are required to support the near term industrial uses (note: Pohick and Gunston widening are needed to meet existing demands on the installation.) Storm water management facilities are required for redevelopment and locations as graphically shown on Figure 9.1.

#### Program:

Existing Buildings Maintained	610,350 SF
Existing Buildings Demolished	198,694 SF
Retained	411,656 SF
1391 & Planned Projects	340,811 SF
New Construction	90,937 SF
<b>Total</b>	<b>843,404 SF</b>
Documented Program	1,140,619 SF
*Future Expansion	-297,215 SF

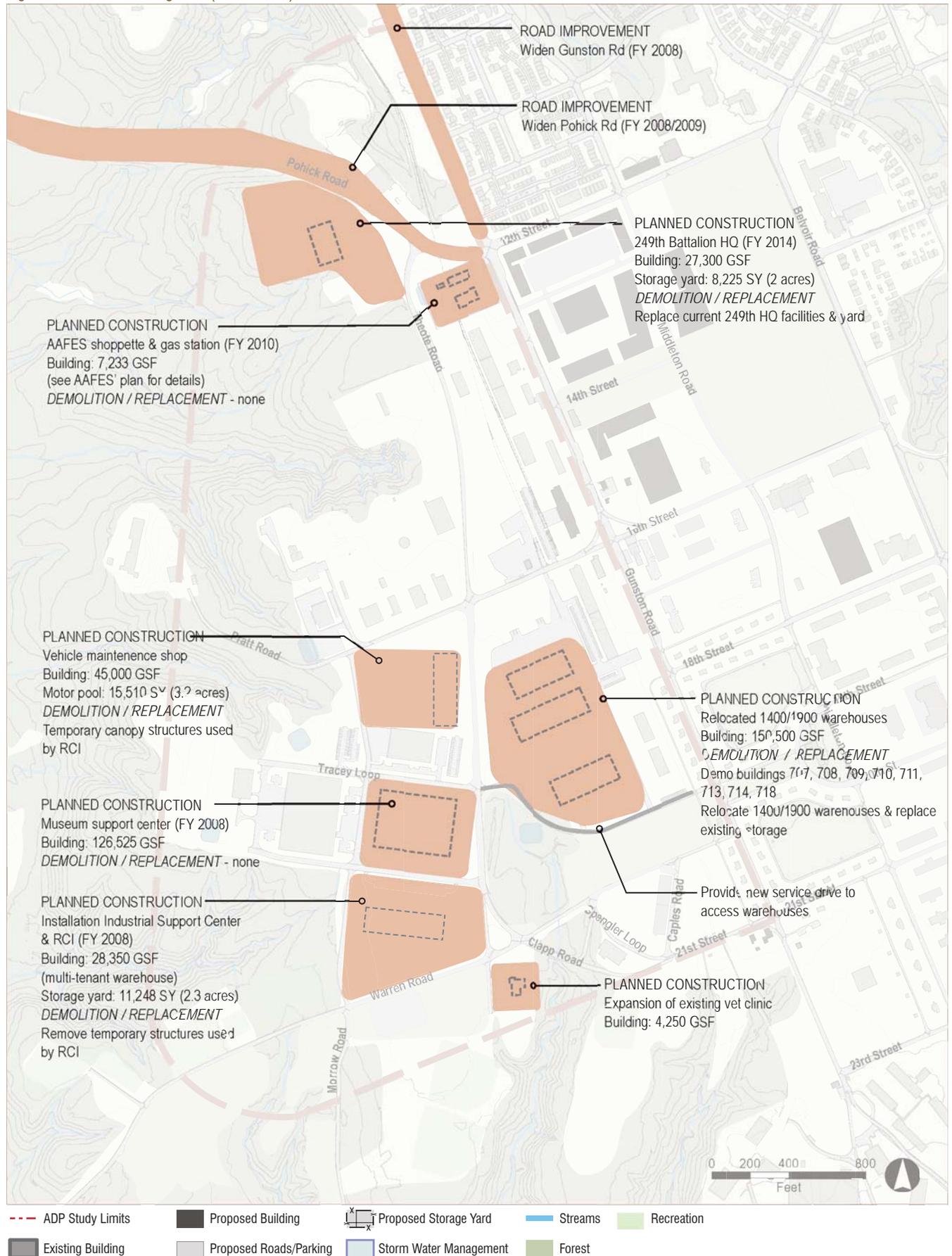
(Deficit to be provided upon full expansion)

\*Future Expansion equals Total Construction less Documented Program Requirements.

#### Motor Pool & Storage Area:

Existing Open Storage	1.3 acres
Proposed Open Storage	4 acres

Figure 9.1 - 2030 Phasing Plan (constrained)



## Long Term Development Strategy- beyond 2030

A long term plan is provided for projects that are not known or funded but can be anticipated in the event that demands become identified. These projects demonstrate the expansion capability of the land and are constrained by limits to area roads and infrastructure (see Expansion Capability Assessment ,submitted separately).

The Framework for the Long term Plan is presented in Figure 9.2.

### ***Program:***

Existing Buildings Maintained	817,604 SF
Existing Buildings Demolished	200,612 SF
Retained	617,604 SF
1391 & Planned Projects	0 SF
New Construction	563,564 SF
<b>Total</b>	<b>1,181,168 SF</b>
Documented Program	1,140,619 SF
*Future Expansion	40,549 SF

\*Future Expansion equals Total Construction less Documented Program Requirements

### ***Motor Pool & Storage Area:***

Existing Open Storage	4 acres
Proposed Open Storage	14.5 acres

Figure 9.2 - Phasing Plan (full build out, unconstrained)

\*Note: All buildings are 1 story unless otherwise noted.

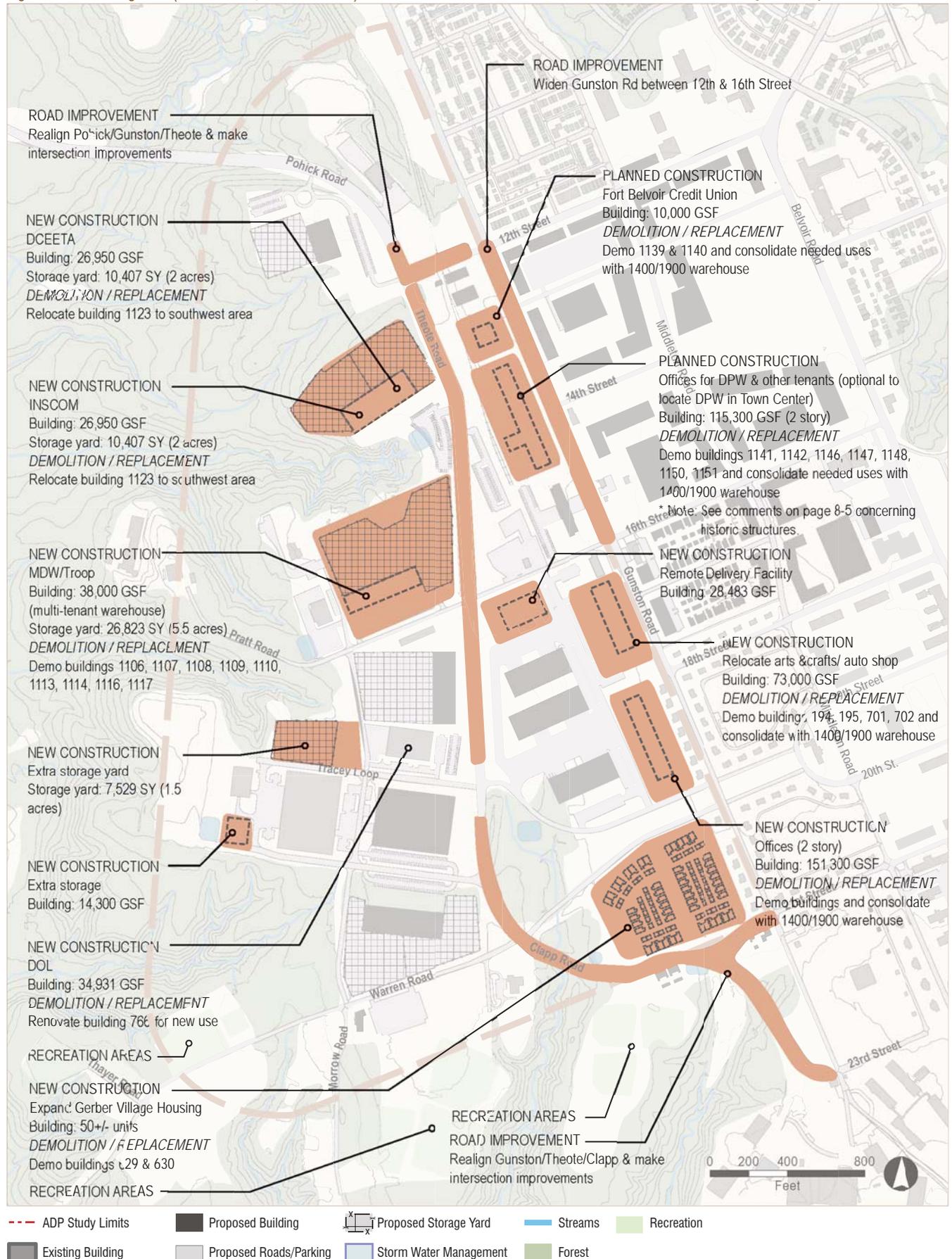
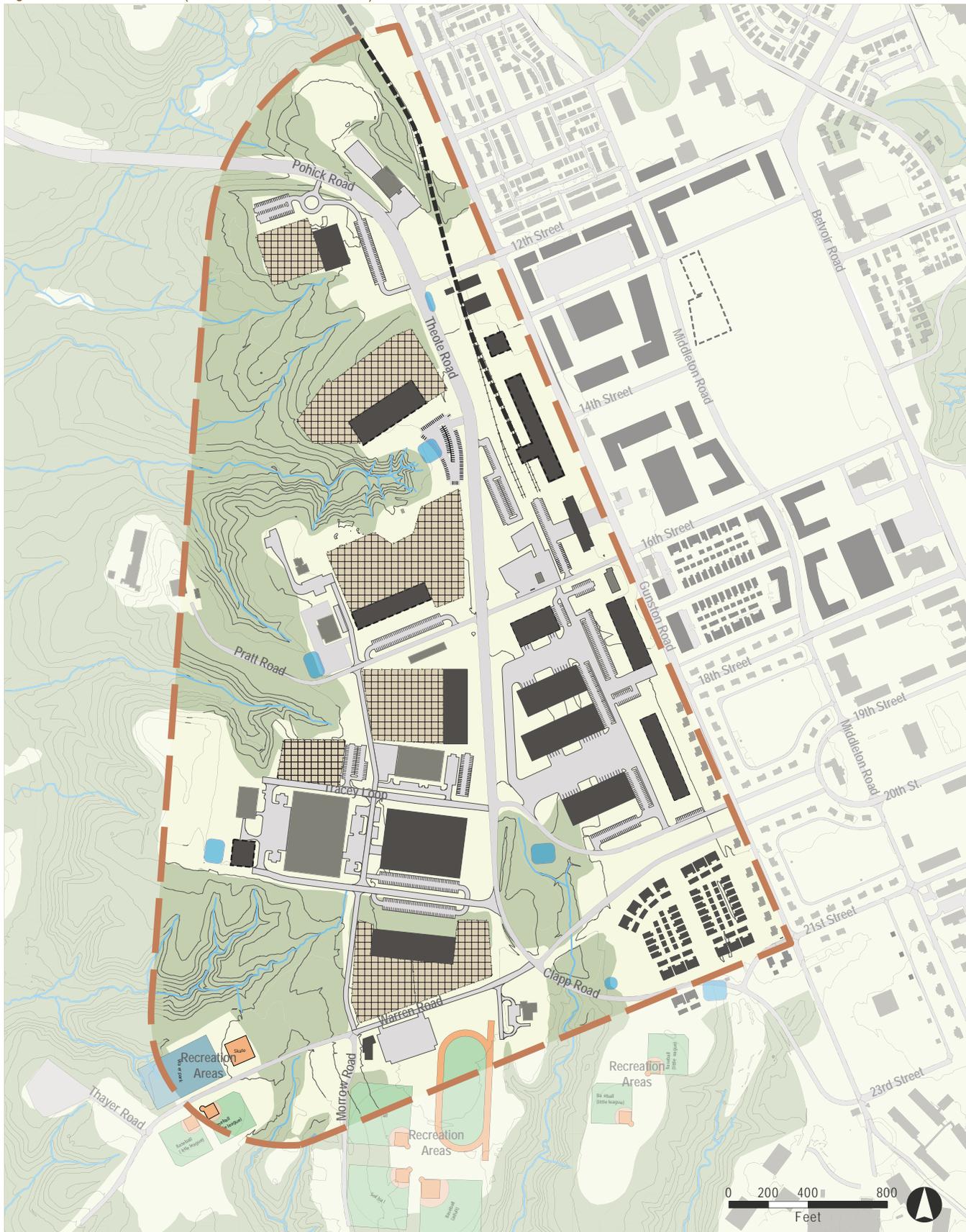


Figure 9.3 - Rendered Plan (full build out, unconstrained)



- ADP Study Limits
- Proposed Building
- Proposed Storage Yard
- Streams
- Recreation
- Existing Building
- Proposed Roads/Parking
- Storm Water Management
- Forest
- Transit Corridor

Figure 9.4 - Full Buildout Facilities Site Map



**Existing Facilities**

193 Admin GP  
740 Storage

766 Storage/Admin  
767 Storage GP/MNT Gen Purpose

768 Sto age  
1089 Recycle/Refuse/Garb

1101 Ele Maint Depot  
1102 Animal Shelter

1124 Fuel/POL Building

**Proposed Facilities**

- ① Widen Gunston Road
- ② Widen Pohick Road
- ③ Pohick/Gunston/Theote Intersection Improvements
- ④ 249th Bar alion HQ
- ⑤ AAFES Shoppette & Gas Station

- ⑥ Fort Belvoir Credit Union (Alt.)
- ⑦ DCEETA
- ⑧ INSCOM
- ⑨ DPW Offices & Other Tenants
- ⑩ Admin/Emergency Services

- ⑪ MDW/Troop
- ⑫ Remote Delivery Facility
- ⑬ Relocated Arts & C aft Shop
- ⑭ Vehicle Maintenance Shop
- ⑮ Storage Yard

- ⑯ Relocated 1400/1900 Warehouses
- ⑰ Offices
- ⑱ Extra Storage
- ⑲ Museum Support Center
- ⑳ New Service Drive

- ㉑ Installation Industrial Support Center & RC I
- ㉒ Expanded Gerber Village Housing
- ㉓ Gunston/Theote/Clapp Intersection Improvements
- ㉔ Expansion of Vet Clinic

## 9.2 Transportation Management Recommendations (Full Expansion)

The Master Plan establishes the road pattern for long term growth for Fort Belvoir. It includes recommendations for roadway widening, signalization, and pedestrian/bicyclist circulation (see Figure 9.5). Within the Industrial Campus the proposed new term projects are planned to allow reservation for future road widening that allows for full expansion of the land. This includes improvements for:

- Widening of Pohick and Theote Roads to 4 lanes, including the realignment of the intersection of Pohick/Theote to favor traffic flow on Theote Road. The southern limit of the Theote widening is 16th Street, where Theote will transition back to a 2-lane roadway.
- Realignment of Theote Road to terminate at the intersection of Gunston/23rd Street. This realignment will complete the ring road concept for South Post, and divert traffic away from residential neighborhoods along Gunston Road. Previous studies, however, have determined this option to be unfeasible (see Section 5.5, page 5-6).
- Widening of Gunston Road to 4 lanes from 12th Street to 16th Street. South of 16th Street, Gunston road will remain as a 2-lane roadway.
- Signalization of two intersections within the Industrial Campus:
  - Theote/Gunston/23rd Street
  - Theote/16th Street
- Conversion of the abandoned railway into a transit corridor, such as a bus-rapid transit (BRT) or light rail, to provide transit services to the Springfield Transportation Center which includes Metrorail and VRE access, as well as a bus transfer station.
- Inclusion of pedestrian and bicycle facilities as part of roadway improvements, to provide internal circulation paths for pedestrian and cyclists, and links between the Industrial Campus and adjacent Town Center area.

Figure 9.5 - All roadway improvements planned for Full Expansion (2050)



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.

A comprehensive Transportation Management Plan (TMP) has been developed for Fort Belvoir. The TMP outlines various strategies that the Fort Belvoir Employee Transportation Coordinator can use to reduce the rate of single occupancy vehicle trips by encouraging, but not limited to, carpooling/ride-sharing, vanpool programs, transit services, and bicycling/walking. In developing site-specific TMP programs, the nature of the operations of the Industrial Campus should be considered.

The land-use within the Industrial Campus will include a small residential area (southern portion, separated by a buffer), limited office space, and industrial buildings used mainly as storage and vehicle maintenance. The TMP is not applicable to reducing truck deliveries, however it can be applied as a tool to reduce employee trips to the office and warehousing. The strategies for Fort Belvoir are laid out in the full Transportation Management Plan in the LRC. See Appendix F for a list of the strategies. The strategies include, but are not limited to, the following:

- Parking management
- Carpooling and ride-share matching
- Vanpool programs
- Transit services
- Economic incentives - subsidies
- Guaranteed ride home
- Bicycling/walking
- Telecommuting/teleworking
- Alternate work schedules
- Commuter centers

The strategies within the TMP strive to reduce the single-occupancy trips during the peak periods by encouraging car/vanpool and transit trips or shifting the work schedule. The strategies would reduce the total daily trips to/from Fort Belvoir, reducing the daily parking requirements.

## 9.5 Infrastructure Recommendations (Full Expansion)

### Sanitary

The proposed Industrial Area will require a new sanitary system to support the additional buildings. Flow from the north portion of the Industrial Area could tie into the proposed system serving the Town Center Area, which is located to the east of the Industrial Area. For additional information on the Town Center Area, see Figure 7-5 in the Town Center ADP, dated October 1, 2007. The flow from the south portion of the Industrial area could also flow east and tie into the existing system in the vicinity of the Theote Road and Warren Road intersection.

The adjacent residential area located southeast of the Industrial Area will also tie into the existing system at the intersection of Theote Road and Warren Road.

Refer to Figure 9.7 for the proposed sewer system layout.

### Storm Water Management (SWM)

Most of the proposed development could be collected into SWM facilities located downstream, to the west, and discharged directly to streams that connect to Accotink Bay. The development that is to occur on the southeast portion of the Industrial Area could be collected in a SWM facility, which could also treat some development from the Town Center Area (see Figure 7-6 in the Town Center ADP, dated October 1, 2007), and outfall into a body of water that discharges to Gunston Cove. Refer to Figure 9.6 for the Industrial Area full build out that depicts locations of SWM facilities and storm water conveyance.

### Water

The full build out plan for the Industrial Area will create a substantial increase in demand. There is little existing infrastructure in this area, however some of the existing water lines will need to be abandoned to accommodate the new development. A new water line is proposed along Theote Road, from which other water lines will branch off to serve the new facilities. Several interconnections can be made to the existing internal water lines within the parcels. Interconnections could be made on the outskirts of the area along 16th Street and Tracey Loop.

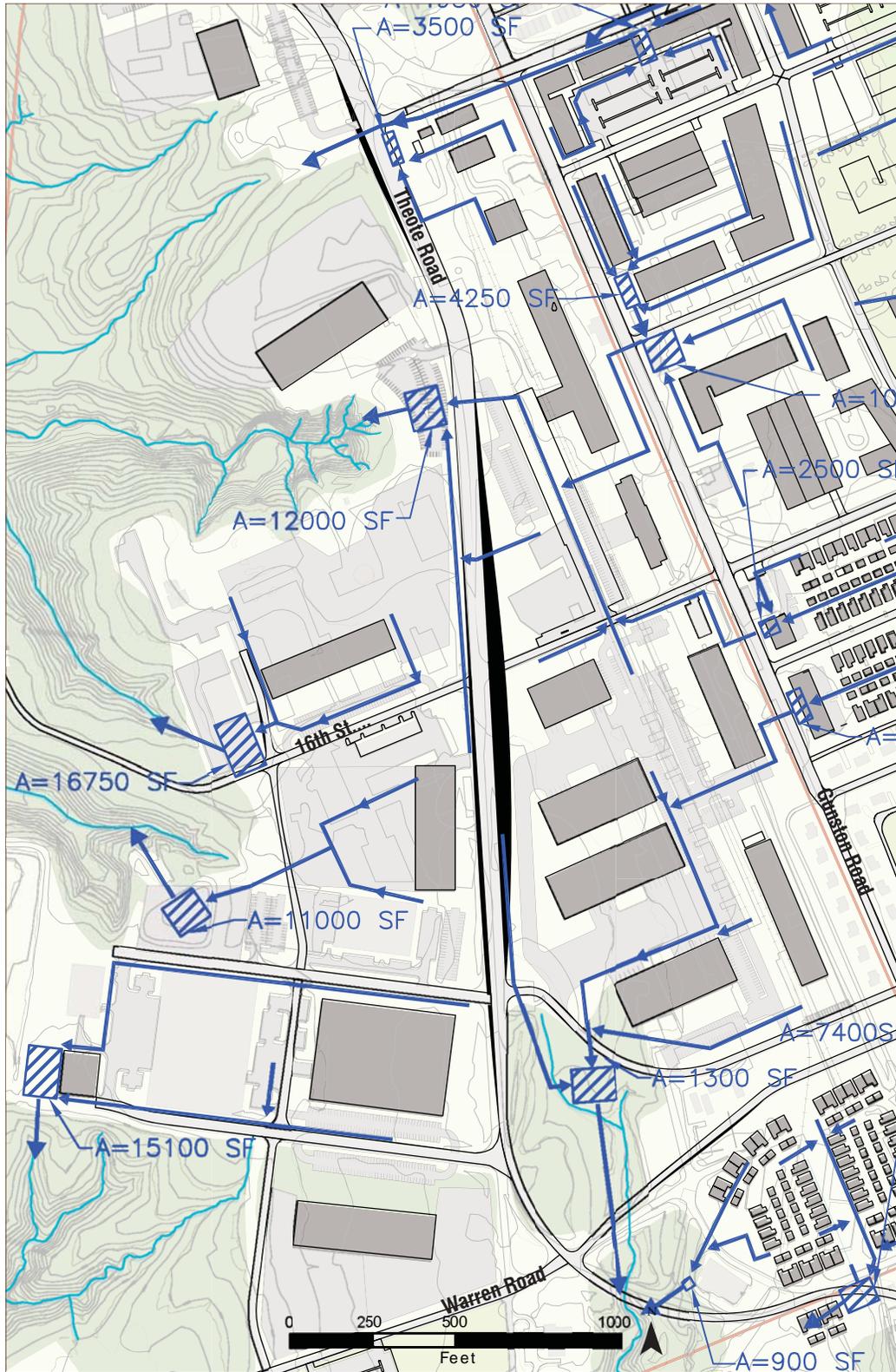
Refer to Figure 9.8 for the proposed water system layout.

Figure 9.6 - Full Buildout Sanitary System, Conceptual Layout



- ADP Study Limits
- ➔ Proposed Sanitary Sewer Line
- Existing Sanitary Sewer Line
- ➔ Major Existing Sanitary Sewer Line

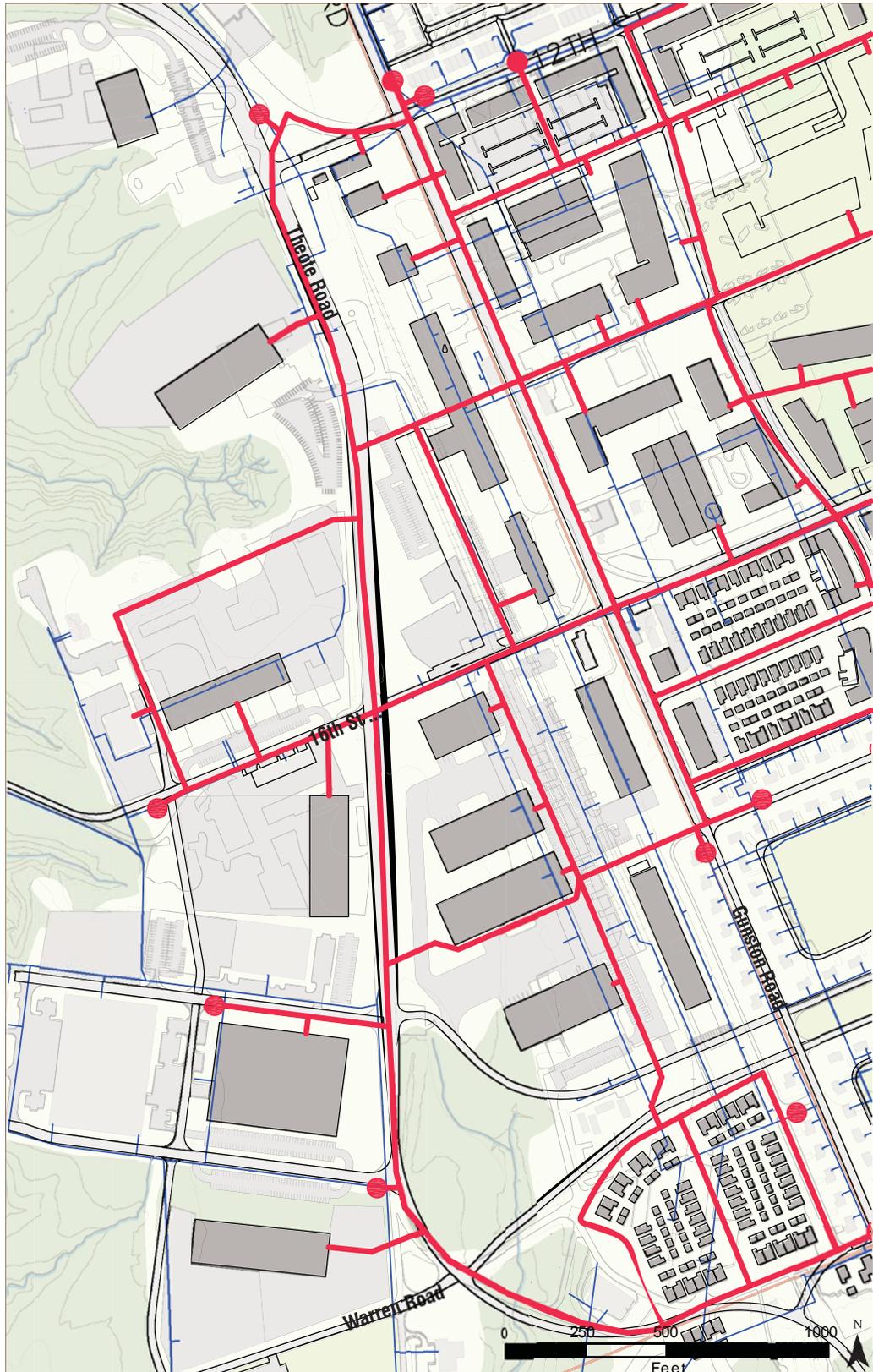
Figure 9.7 - Full Buildout Storm Sewer System, Conceptual Layout



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

Note: A=Surface Area of SWM Pond

Figure 9.8 - Full Buildout Water System, Conceptual Layout



- ADP Study Limits
- Existing Water System
- Proposed Water System
- Connection Point

## 9.4 General Recommendations

### Environmental Safeguards

The industrial area plan establishes a street framework and block pattern that allows for a variety of building types. The planning principles endorsed with LEED ND encourage compact growth, promote pedestrian activity, and improve air quality, etc. to create a framework that can be adjusted over time in response to future needs of industrial tenants. The increase in the demand for new industrial uses will create a greater burden on the existing natural systems (i.e. storm water runoff, heat buildup, and airborne emissions, etc.); therefore, adherence to LEED ND, LEED NC guidelines, and other environmental regulatory requirements will be necessary to expand the industrial area. The following implementation safeguards are recommended:

- Implement LEED ND as a planning tool to evaluate future plans.
- Request future tenants complete LEED ND checklist for projects 20 acres or more in size.
- Weigh the checklist results against goals of the LRC, SRC, IDG, and ADPs before approving plans for new construction.
- Periodically update and review the checklist as new projects are planned/ constructed/ renovated.

### Security Recommendations

The proposed industrial ADP depicts future building and street setbacks that meet the minimum UFC criteria. Some agencies require specialized forms of security measures that separate them from Main Post activities and require enhanced security measures.

Future BRAC requirements and tenants, such as NGA, WHS, and Missile Defense Agency (MDA) will create additional security burdens that could impact the industrial area such as a need for a remote delivery facility (RDF) and emergency service centers. Future tenant needs that exceed the minimum UFC Antiterrorism/Force Protection (AT/FP) requirements will require larger land areas for development; however these needs should be identified early on in the planning process.

Fort Belvoir's military population, along with the civilian contractors that support its mission, will only increase. This requires efficient planning and land use development to avoid conflicts with DoD agencies.

In summary, a new RDF facility is planned to be located in the Industrial Area as shown in Figure 9.2. This is appropriate as the Industrial area is not considered to be a high density population area. Tenants requiring space that exceed that UFC criteria may impact the ADP concepts, therefore, planning may be reviewed. For a complete discussion of security and AT/FP measures see the LRC.

### Updating the Plan

The Industrial ADP should be periodically updated to reflect work completed, and re-mapped in the Belvoir GIS system in order to assess and monitor possible conflicts with planned uses. The ADP should be updated every five years.

## **Design Integration**

The IDG and other guiding aesthetic principles should be fully integrated into any final plan for new projects. Design elements that directly relate to the Industrial Area include:

- Standard dimensions and screening measures for truck loading spaces/docks.
- Outdoor lighting levels.
- Sound walls and building design to mitigate high noise levels .
- Streetscaping including landscaping, site furnishings, and walkway standards.

## **9.5 Required NEPA Documentation**

The industrial study area future programmed projects, including the AAFES Shoppette and Prime Power Battalion headquarters, were included in the larger Environmental Impact Statement (EIS) that covers all BRAC projects and “cumulative impacts” for future growth. The EIS includes all roads and infrastructure; therefore there is no additional NEPA documentation required for this area of the post.

Any future projects as presented in the long term plan (see Figure 9.3) will need an Environmental Assessment including the additional roads improvements such as the widening of Theote Road to four lanes. Future NEPA actions would be required if the base requires full expansion and can overcome current constraints that limit growth (see Expansion Capability Assessment Report submitted separately).

The entire Master Plan documentation needs to have an EIS approved once it is completed.

# Land Use Matrix

**A**

**Appendix**

CLASS	FCG	FCG INFORMATION Facility Category Group Description	UM	LAND USE CLUSTERS						
				Airfields	Ranges & Training	Industrial	Community	Professional / Institutional	Residential	Troop
P	F12200	MARINE FUELING FACILITIES	GM	N	N	A	N	N	N	N
P	F12300	VEHICLE FUELING FACILITIES	OL	A	N	A	N	N	N	A
P	F12460	MISC FUEL STORAGE	GA	A	N	A	N	N	N	A
D	F13115	INFORMATION SYSTEMS FACILITIES	SF	A	N	A	C	C	C	C
D	F13131	INFO PROC CTR	SF	A	N	A	C	C	C	C
D	F13135	PHOTO LAB	SF	N	N	A	N	C	N	C
P	F13185	PRINT PLANT	SF	N	N	A	N	N	N	N
P	F14116	FORENSIC LAB	SF	N	N	A	N	A	N	N
P	F14129	TRAINING AIDS SUPPORT CENTERS (TASC)	SF	N	A	A	N	N	N	A
P	F14175	INDUSTRIAL LAUNDRY	SF	N	N	A	N	N	N	N
P	F14310	OPERATIONS BUILDINGS, SHIP	SF	N	N	A	N	N	N	N
P	F14962	CENTRAL WASH FACILITIES	EA	N	A	A	N	N	N	A
P	F15100	PIERS	SY	N	A	A	N	N	N	N
P	F15200	WHARFS	SY	N	A	A	N	N	N	N
P	F15500	SMALL CRAFT BERTHING	FB	N	A	A	N	N	N	N
D	F17121	FIRING RANGES, INDOOR	SF	N	A	A	N	N	N	C
D	F17140	TRAINING CENTERS—RESERVES	SF	C	N	A	N	N	N	A
D	F17142	TRAINING CENTERS—ARNG/USAR	SF	C	N	A	N	N	N	A
D	F17180	TRAINING CENTERS—NATIONAL GUARD	SF	C	N	A	N	N	N	A
P	F21110	AIRCRAFT MAINTENANCE FACILITIES	SF	A	N	A	N	N	N	N
P	F21140	AIRCRAFT ENGINE TEST FACILITIES	SF	A	N	A	N	N	N	N
P	F21210	MISSILE, GUIDED, MAINTENANCE FACILITIES, DEPOT	SF	N	N	A	N	N	N	N
P	F21310	SHIP MAINTENANCE FACILITIES	SF	N	N	A	N	N	N	N
P	F21320	MARINE RAILWAY	SF	N	N	A	N	N	N	N
P	F21330	SHIP REPAIR SHOP	SF	N	N	A	N	N	N	N
P	F21335	SHIP REPAIR FAC	SF	N	N	A	N	N	N	N
P	F21407	ARNG MAINTENANCE FACILITIES	SF	C	N	A	N	N	N	A
P	F21409	ARMY RESERVE MAINTENANCE FACILITIES	SF	C	N	A	N	N	N	A
P	F21410	VEHICLE MAINTENANCE SHOPS	SF	N	N	A	N	N	N	A
P	F21440	DEPOT MAINTENANCE/REBUILD SHOPS	SF	N	N	A	N	N	N	N
P	F21500	DEPOT WEAPONS MAINTENANCE SHOPS	SF	N	N	A	N	N	N	N
P	F21512	WEAPON DEMIL DEPOT	SF	N	N	A	N	N	N	N
P	F21540	SPECIAL WEAPON DEPOT	SF	N	N	A	N	N	N	N
P	F21545	WEAPONS REPAIR FACILITIES	SF	N	N	A	N	N	N	N
P	F21600	DEPOT AMMUNITION MAINTENANCE FACILITIES	SF	N	N	A	N	N	N	N
P	F21632	AMMO DEMO/MAINT	SF	N	N	A	N	N	N	N
P	F21670	AMMUNITION REPAIR, INSTALLATION	SF	N	N	A	N	N	N	N

A = Allowed  
N = Not allowed  
C = Conditional  
S = Special

CLASS	FCG	FCG INFORMATION Facility Category Group Description	UM	LAND USE CLUSTERS						
				Airfields	Ranges & Training	Industrial	Community	Professional / Institutional	Residential	Troop
P	F21700	COMMUNICATIONS/ELECTRONICS REPAIR SHOPS, DEPOT	SF	N	N	A	N	N	N	N
P	F21800	DOL/PROCURED ITEMS & EQUIPMENT MAINTENANCE SHOPS	SF	N	N	A	N	N	N	N
P	F21840	RAILROAD EQUIPMENT/ENGINE MAINTENANCE SHOP	SF	N	N	A	N	N	N	N
P	F21881	AIRBORNE EQUIPMENT/PARACHUTE REPAIR SHOP	SF	N	N	A	N	N	N	N
P	F21885	VEHICLE MAINTENANCE DOL/DPW	SF	N	N	A	N	N	N	N
D	F21900	INSTALLATION MAINTENANCE/REPAIR FACILITIES	SF	C	N	A	C	C	C	C
P	F22100	AIRCRAFT PRODUCTION FACILITIES	SF	N	N	A	N	N	N	N
P	F22200	GUIDED MISSILE PRODUCTION FACILITIES	SF	N	N	A	N	N	N	N
P	F22400	TANK/AUTOMOTIVE PRODUCTION FACILITIES	SF	N	N	A	N	N	N	N
P	F22500	WEAPONS PRODUCTION FACILITIES	SF	N	N	A	N	N	N	N
P	F22600	AMMUNITION PRODUCTION FACILITIES	SF	N	N	A	N	N	N	N
D	F31000	RDT&E LABS	SF	N	N	A	N	C	N	N
D	F31060	MEDICAL RESEARCH LABS	SF	N	N	A	N	C	N	N
P	F31100	AIRCRAFT RDT&E FACILITIES	SF	A	N	A	N	N	N	N
P	F31200	MISSILE/SPACE RDT&E FACILITIES	SF	N	N	A	N	N	N	N
P	F31400	TANK/AUTOMOTIVE RDT&E FACILITIES	SF	N	N	A	N	N	N	N
P	F31500	WEAPONS/WEAPONS SYSTEMS RDT&E FACILITIES	SF	N	N	A	N	N	N	N
P	F31600	AMMUNITION RDT&E FACILITIES	SF	N	N	A	N	N	N	N
P	F31700	COMMUNICATION/ELECTRONIC RDT&E FACILITIES	SF	N	N	A	N	A	N	N
P	F31800	PROPULSION RDT&E FACILITIES	SF	N	N	A	N	N	N	N
P	F32100	TECHNICAL SERVICE RDT&E FACILITIES	SF	N	N	A	N	N	N	N
P	F41100	BULK LIQUID FUEL STORAGE	BL	N	N	A	N	N	N	N
P	F41170	LUBRICANT STORAGE	BL	N	N	A	N	N	N	N
P	F42100	DEPOT AMMUNITION STORAGE	SF	N	N	A	N	N	N	N
P	F42200	INSTALLATION AMMUNITION STORAGE	SF	N	N	A	N	N	N	N
P	F42288	AMMO STORAGE OTHER THAN DEPOT OR UNIT	SF	N	N	A	N	N	N	N
P	F43100	DEPOT COLD STORAGE	SF	N	N	A	N	N	N	N
P	F43200	INSTALLATION COLD STORAGE	SF	N	N	A	N	N	N	N
P	F44100	ENCLOSED STORAGE, DEPOT	SF	N	N	A	N	N	N	N
P	F44130	HUMIDITY CONTROLLED STORAGE, DEPOT	SF	N	N	A	N	N	N	N
P	F44135	HAZARDOUS STORAGE, DEPOT	SF	N	N	A	N	N	N	N
P	F44180	COVERED STORAGE, DEPOT	SF	N	N	A	N	N	N	N
D	F44210	ENCLOSED STORAGE, INSTALLATION	SF	C	N	A	N	N	N	C
D	F44215	OXYGEN/ACETYL STORAGE	SF	C	N	A	N	N	N	C
P	F44222	COVERED STORAGE, INSTALLATION	SF	A	A	A	N	N	N	C

A = Allowed  
N = Not allowed  
C = Conditional  
S = Special

CLASS	FCG	FCG INFORMATION Facility Category Group Description	UM	LAND USE CLUSTERS						
				Airfields	Ranges & Training	Industrial	Community	Professional / Institutional	Residential	Troop
P	F44230	HUMIDITY CONTROLLED STORAGE, INSTALLATION	SF	C	N	A	N	N	N	C
P	F44288	INSTALLATION STORAGE OTHER THAN DEPOT OR ORGANIZATIONAL	SF	C	N	A	N	N	N	N
P	F53020	MEDICAL LABORATORIES	SF	N	N	A	N	A	N	N
P	F53030	MORGUES	SF	N	N	A	N	A	N	N
P	F53040	VETERINARY FACILITIES	SF	N	N	A	N	A	N	N
P	F53060	MEDICAL WAREHOUSES	SF	N	N	A	N	N	N	N
P	F55000	DISPENSARIES AND CLINICS	SF	A	A	A	A	A	A	A
P	F73010	FIRE AND RESCUE FACILITIES	SF	A	A	A	A	A	A	A
P	F73015	CONFINEMENT FACILITIES	SF	N	N	A	N	N	N	N
P	F73016	POLICE/MP STATIONS	SF	N	N	A	A	A	N	N
P	F74054	EXCHANGE SUPPORT FACILITIES	SF	N	N	A	N	N	N	N
P	F74055	EXCHANGE WAREHOUSE	SF	N	N	A	N	N	N	N
P	F76020	MONUMENTS AND MEMORIALS	EA	A	A	A	A	A	A	A
P	F86000	RAILROAD TRACKS	MI	A	A	A	N	N	N	A
D	F11120	RUNWAYS, ROTARY WING	SY	A	C	C	N	C	N	C
D	F14115	WEATHER STATION	SF	A	N	C	N	N	N	N
P	F14126	ANIMAL SHELTERS	SF	C	N	C	N	N	N	C
D	F14161	EOC/SCIF FACILITIES	SF	C	N	C	N	A	N	C
D	F17120	GENERAL INSTRUCTION BUILDINGS	SF	C	N	C	N	A	N	C
D	F17200	SIMULATOR FACILITIES	SF	A	A	C	N	A	N	A
D	F44223	ARMS STORAGE-BN	SF	C	N	C	N	N	N	A
D	F60000	ADMINISTRATIVE FACILITIES	SF	N	N	C	C	A	N	A
D	F74051	EXCHANGE EATING FACILITIES	SF	C	C	C	A	A	A	C
D	F74052	EXCHANGE SERVICE STATIONS	SF	C	C	C	A	A	A	C
D	F74053	EXCHANGE RETAIL FACILITIES	SF	C	C	C	A	N	C	C

A = Allowed  
N = Not allowed  
C = Conditional  
S = Special

# Existing Buildings Tabulation

**B**

**Appendix**

Table B.1 Existing Buildings in ADP Study Area

FACNO	EXISTING GROSS	UNIT	DESCRIPTION	CONST	TYPE	YRBLT	CUCC	NAME
193	4,054	SF	ADMIN GEN PURP	P	B	1934	61050	INSCOM
193	4,435	SF	CIDC FLD OPS BD		B		14114	HQ USACIDC
193	1,647	SF	TELEVIDEO CTR		B		13175	CMD USAISC OPERATN S INGO TECH
193	2,534	SF	INFO PROC CTR		B		13131	CMD USAISC OPERATN S INGO TECH
195			TRANSFORMERS	P	U	1935	81360	HQ CMD FT BELVOIR
195	448	SF	PLT/UTIL BLDG.	P	B	1935	89120	HQ CMD FT BELVOIR
610	6,818	SF	VET FACILITY	P	B	1993	53040	VETERINARY COMMAND
612	11,071	SF	ADMIN GEN PURP	P	B	1940	61050	29TH LID
629	9,318	SF	STORAGE GP INST	S	B	1944	44220	HQ CMD FT BELVOIR
630	1,776	SF	STORAGE GP INST	S	B	1944	44220	HQ CMD FT BELVOIR
630	3,646	SF	ADMIN GEN PURP		B		61050	VETERINARY COMMAND
630	2,337	SF	MED WAREHOUSE		B		53060	VETERINARY COMMAND
701	11,520	SF	STORAGE GP INST	P	B	1946	44220	HQ CMD FT BELVOIR
701	4,480	SF	ADMIN GEN PURP		B		61050	HQ CMD FT BELVOIR
702	6,366	SF	STORAGE GP INST	P	B	1946	44220	HQ CMD FT BELVOIR
702	8,257	SF	ADMIN GEN PURP		B		61050	HQ CMD FT BELVOIR
704	9,403	SF	STORAGE GP INST	S	B	1946	44220	FBRC
705	9,449	SF	EXCH WAREHOUSE	S	B	1944	74055	AAFES
706	9,444	SF	EXCH WAREHOUSE	S	B	1946	74055	AAFES
707	45,139	SF	MNT GEN PURPOSE	P	B	1935	21885	HQ CMD FT BELVOIR
708	11,236	SF	STORAGE GP INST	S	B	1946	44220	HQ CMD FT BELVOIR
709	7,020	SF	STORAGE GP INST	S	B	1944	44220	HQ CMD FT BELVOIR
710	6,516	SF	STORAGE GP INST	S	B	1944	44220	HQ CMD FT BELVOIR
710	2,800	SF	STORAGE GP INST		B		44220	US FISH & WILDLIFE SERVICE
711	16,877	SF	STORAGE GP INST	P	B	1946	44220	INSCOM
712	13,360	SF	STORAGE GP INST	P	B	1946	44220	INSCOM
712	3,134	SF	ADMIN GEN PURP		B		61050	INSCOM
713			TRANSFORMERS	P	U	1935	81360	HQ CMD FT BELVOIR
713	195	SF	SUB/SWIT STA BD		B		89113	HQ CMD FT BELVOIR
714	10,883	SF	CIDC FLD OPS BD	P	B	1960	14114	HQ USACIDC
717	240	SF	FUEL/POL BLDG.	P	B	1952	14165	HQ CMD FT BELVOIR
718	1,974	SF	FLAM MAT STR IN	P	B	1956	44240	CMD USAISC OPERATN S INGO TECH
719			HEAT FUEL UNGD	P	S	1952	12470	HQ CMD FT BELVOIR
722	110	SF	REC SHELTER	S	S	1994	75052	HQ CMD FT BELVOIR
740	8,038	SF	STORAGE GP INST	P	B	1934	44220	HQ CMD FT BELVOIR
766	25,500	SF	STORAGE GP INST	P	B	1994	44220	FBRC
766	9,431	SF	ADMIN GEN PURP		B		61050	RCI
767	101,161	SF	STORAGE GP INST	P	B	1994	44220	DEFENSE SUPPLY SERVICE-WASH.
767	16,280	SF	MNT GEN PURPOSE		B		21885	DEFENSE SUPPLY SERVICE-WASH.
768	16,300	SF	STORAGE GP INST	P	B	1994	44220	HQ CMD FT BELVOIR
1089			RECYCLE FAC	P	S	1938	83320	HQ CMD FT BELVOIR
1089	12,017	SF	REFUSE/GARB BLD	P	B	1938	89133	HQ CMD FT BELVOIR
1101	11,578	SF	ELE MAINT DEPOT	P	B	1991	21710	CMD USAISC OPERATN S INGO TECH
1102	4,208	SF	ANIMAL SHELTER	P	S	2003	53045	HQ CMD FT BELVOIR
1106	54	SF	OIL STR BLDG.	T	B	1961	21470	HQ CMD FT BELVOIR

FACNO	EXISTING GROSS	UNIT	DESCRIPTION	CONST	TYPE	YRBLT	CUCC	NAME
1107	2,052	SF	STORAGE GP INST	S	B	1959	44220	FBRC
1108	5,000	SF	STORAGE GP INST	P	B	1955	44220	FBRC
1108	5,000	SF	STORAGE GP INST		B		44220	HQ CMD FT BELVOIR
1109	3,789	SF	STORAGE GP INST	T	B	1958	44220	DYNCORP
1110	1,650	SF	STR SHED GP INS	S	S	1961	44222	DYNCORP
1111			DIESEL STR UNGD	P	S	1945	12480	DYNCORP
1112	280	SF	FLAM MAT STR IN	T	B	1918	44240	HQ CMD FT BELVOIR
1113	7,126	SF	STORAGE GP INST	S	B	1946	44220	DYNCORP
1114	7,839	SF	STORAGE GP INST	S	B	1938	44220	DYNCORP
1116	14,715	SF	VEH MAINT SHOP	P	B	1956	21410	DTRA
1116	5,546	SF	CO HQ BLDG.		B		14185	DTRA
1117	3,116	SF	STORAGE SILO	P	B	1987	44216	DYNCORP
1123	231	SF	AMMO STR OTHER	P	B	2003	42288	HQ CMD FT BELVOIR
1124	1,044	SF	FUEL/POL BLDG.	P	B	1934	14165	HQ CMD FT BELVOIR
1126	8,010	SF	STORAGE GP INST	P	B	1955	44220	SYS PERF OFC
1130			ENTRANCE GATE	P	S	1995	87250	HQ CMD FT BELVOIR
1132	18,406	SF	GEN REP INST	S	B	1941	17132	PRIME POWER SCHOOL
1133	4,066	SF	STORAGE GP INST	T	B	1958	44220	PRIME POWER SCHOOL
1134	650	SF	FLAM MAT STR IN	S	B	1949	44240	PRIME POWER SCHOOL
1139	9,773	SF	EXCH WAREHOUSE	T	B	1917	74055	AAFES
1140	10,488	SF	STORAGE GP INST	T	B	1917	44220	AAFES
1141	10,379	SF	STORAGE GP INST	T	B	1917	44220	AAFES
1142	5,134	SF	STORAGE GP INST	T	B	1917	44220	NIGHT VISION LAB
1142	3,634	SF	STORAGE GP INST		B		44220	HQ CMD FT BELVOIR
1142	1,635	SF	STORAGE GP INST		B		44220	HQ CMD FT BELVOIR
1143	5,169	SF	STORAGE GP INST	T	B	1917	44220	AAFES
1143	5,204	SF	STORAGE GP INST		B		44220	HQ CMD FT BELVOIR
1144	5,721	SF	STORAGE GP INST	T	B	1917	44220	HQ CMD FT BELVOIR
1144	4,712	SF	STORAGE GP INST		B		44220	USASAC, AMC
1145	10,373	SF	STORAGE GP INST	T	B	1917	44220	DYNCORP
1146	6,723	SF	VEH MAINT SHOP	S	B	1942	21410	HQ CMD FT BELVOIR
1147	3,232	SF	REC EQ CHECKOUT	S	B	1941	74065	HQ CMD FT BELVOIR
1148	4,415	SF	MNT GEN PURPOSE	S	B	1941	21885	HQ CMD FT BELVOIR
1150	4,079	SF	EXCH SER OUTLET	P	B	1934	74056	AAFES
1151			TRANSFORMERS	P	U	1935	81360	HQ CMD FT BELVOIR
1151	105	SF	PLT/UTIL BLDG.	P	B	1935	89120	HQ CMD FT BELVOIR
<b>TOTAL</b>	<b>610,350</b>							

Note: This tabulation does not include 13 Family Housing Units and 6 Trailers in the Study Area Limits

Table B.2: Existing Open Storage in ADP Study Area

FACNO	EXISTING GROSS	UNIT	DESCRIPTION	CONST	TYPE	YRBLT	CUCC	NAME
623	20,000	SY	OPEN STR INST	P	S	1961	45210	HQ CMD FT BELVOIR
703	545	SY	OPEN STR INST	T	S	1945	45210	HQ CMD FT BELVOIR
720	340,512	SY	OPEN STR INST	P	S	1996	45210	HQ CMD FT BELVOIR
747	3,435	SY	OPEN STR INST	P	S	1961	45210	BASE MAINTENANCE
759	13,780	SY	OPEN STR INST	P	S	1961	45210	HQ CMD FT BELVOIR
1105	5,567	SY	OPEN STR INST	P	S	1945	45210	HQ CMD FT BELVOIR
1129	14,896	SY	OPEN STR INST	P	S	1945	45210	HQ CMD FT BELVOIR
TOTAL	398,735							

Table B.3: Existing Facilities Planned for Demolition within the ADP Study Area

FACNO	DESCRIPTION	FY FUNDED	NOTES
<b>INDUSTRIAL AREA BUILDINGS ON THE DEMOLITION LIST:</b>			
705	Warehouse Gen Purpose	2006	
706	Warehouse Gen Purpose	2006	
1112	Flammable material storage	2006	
1147	Rec Equipment Checkout	2007	
1148	Maintenance, Gen Purpose	2007	
629	Warehouse Gen Purpose	2008	
630	Warehouse Gen Purpose	2008	
704	Warehouse Gen Purpose	2008	
1139	Warehouse Gen Purpose	2008	
1140	Warehouse Gen Purpose	2008	
1141	Warehouse Gen Purpose	2008	
1146	Vehicle maintenance	2008	
<b>INDUSTRIAL AREA BUILDINGS PLANNED FOR DEMOLITION BUT NOT ON SCHEDULE:</b>			
701	Warehouse Gen Purpose		
702	Warehouse Gen Purpose		
<b>INDUSTRIAL AREA BUILDINGS AFFECTED BY SHORT TERM CONSTRUCTION SITINGS:</b>			
1139	Belvoir Credit Union	2009	already on active demo list
1140	Belvoir Credit Union	2009	possible impact, but already on demo list
1132	249th Bn HQ	2010	bldgs vacated by BRAC moves
1133	249th Bn HQ	2010	bldgs vacated by BRAC moves
1134	249th Bn HQ	2010	bldgs. vacated by BRAC moves
1144	South Post Fire Station	2011	potential impact, design may not include this bldg...
1145	South Post Fire Station	2011	potential impact, design may not include this bldg...
<b>INDUSTRIAL AREA SHORT TERM PROJECTS THAT DO NOT AFFECT EXISTING BUILDINGS:</b>			
	AAFES Shoppette w. gas, etc.	2008	
	Museum Support Center	2008	

# User Surveys

**C**

**Appendix**

This Appendix contains the list of tenant organizations that were asked to respond to a standard questionnaire to elicit input on their space requirements for the Industrial Area.

The list of respondents is color coded to indicate the organizations that responded and the responses which were incorporated into the program requirements for the Industrial Area Development Plan.

The original responses to the questionnaire follow the list of organizations.

# LEED Neighborhood Development Checklist

D

Appendix

*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.*



## 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

<b>15</b>	<b>Smart Location &amp; Linkage</b>	<b>30 Points Possible</b>
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<b>Yes</b>	Prereq 1	<b>Smart Location</b>	Required
<b>1</b>		Option #:	
<b>Yes</b>	Prereq 2	<b>Proximity to Water and Wastewater Infrastructure</b>	Required
<b>1</b>		Option #:	
<b>Yes</b>	Prereq 3	<b>Imperiled Species and Ecological Communities</b>	Required
<b>2</b>		Option #:	
<b>Yes</b>	Prereq 4	<b>Wetland and Water Body Conservation</b>	Required
<b>3</b>		Option #:	
<b>Yes</b>	Prereq 5	<b>Farmland Conservation</b>	Required
<b>2</b>		Option #:	
<b>Yes</b>	Prereq 6	<b>Floodplain Avoidance</b>	Required
<b>2</b>		Option #:	
<b>2</b>	Credit 1	<b>Brownfield Redevelopment</b>	2
<b>1</b>	Credit 2	<b>High Priority Brownfields Redevelopment</b>	1
<b>6</b>	Credit 3	<b>Preferred Location</b>	10
<b>1</b>	Credit 4	<b>Reduced Automobile Dependence</b>	8
<b>1</b>	Credit 5	<b>Bicycle Network</b>	1
	Credit 6	<b>Housing and Jobs Proximity</b>	3
	Credit 7	<b>School Proximity</b>	1
<b>1</b>	Credit 8	<b>Steep Slope Protection</b>	1
<b>1</b>	Credit 9	<b>Site Design for Habitat or Wetlands Conservation</b>	1
<b>1</b>	Credit 10	<b>Restoration of Habitat or Wetlands</b>	1
<b>1</b>	Credit 11	<b>Conservation Management of Habitat or Wetlands</b>	1

<b>18</b>	<b>Neighborhood Pattern &amp; Design</b>	<b>39 Points Possible</b>
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<b>Maybe</b>	Prereq 1	<b>Open Community</b>	Required
<b>Yes</b>	Prereq 2	<b>Compact Development</b>	Required
<b>2</b>	Credit 1	<b>Compact Development</b>	7
<b>2</b>	Credit 2	<b>Diversity of Uses</b>	4
<b>3</b>	Credit 3	<b>Diversity of Housing Types</b>	3
<b>2</b>	Credit 4	<b>Affordable Rental Housing</b>	2
	Credit 5	<b>Affordable For-Sale Housing</b>	2
<b>1</b>	Credit 6	<b>Reduced Parking Footprint</b>	2
<b>4</b>	Credit 7	<b>Walkable Streets</b>	8
	Credit 8	<b>Street Network</b>	2
	Credit 9	<b>Transit Facilities</b>	1
	Credit 10	<b>Transportation Demand Management</b>	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

<b>22</b>	<b>Green Construction &amp; Technology</b>	<b>31 Points Possible</b>
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<b>Yes</b>	Prereq 1	<b>Construction Activity Pollution Prevention</b>	Required
2	Credit 1	<b>LEED Certified Green Buildings</b>	3
1	Credit 2	<b>Energy Efficiency in Buildings</b>	3
3	Credit 3	<b>Reduced Water Use</b>	3
1	Credit 4	<b>Building Reuse and Adaptive Reuse</b>	2
1	Credit 5	<b>Reuse of Historic Buildings</b>	1
1	Credit 6	<b>Minimize Site Disturbance through Site Design</b>	1
1	Credit 7	<b>Minimize Site Disturbance during Construction</b>	1
1	Credit 8	<b>Contaminant Reduction in Brownfields Remediation</b>	1
5	Credit 9	<b>Stormwater Management</b>	5
	Credit 10	<b>Heat Island Reduction</b>	1
	Credit 11	<b>Solar Orientation</b>	1
	Credit 12	<b>On-Site Energy Generation</b>	1
1	Credit 13	<b>On-Site Renewable Energy Sources</b>	1
	Credit 14	<b>District Heating &amp; Cooling</b>	1
	Credit 15	<b>Infrastructure Energy Efficiency</b>	1
1	Credit 16	<b>Wastewater Management</b>	1
1	Credit 17	<b>Recycled Content for Infrastructure</b>	1
1	Credit 18	<b>Construction Waste Management</b>	1
1	Credit 19	<b>Comprehensive Waste Management</b>	1
1	Credit 20	<b>Light Pollution Reduction</b>	1

<b>1</b>	<b>Innovation &amp; Design Process</b>	<b>6 Points</b>
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	Credit 1.1	<b>Innovation in Design: Provide Specific Title</b>	1
	Credit 1.2	<b>Innovation in Design: Provide Specific Title</b>	1
	Credit 1.3	<b>Innovation in Design: Provide Specific Title</b>	1
	Credit 1.4	<b>Innovation in Design: Provide Specific Title</b>	1
	Credit 1.5	<b>Innovation in Design: Provide Specific Title</b>	1
1	Credit 2	<b>LEED® Accredited Professional</b>	1

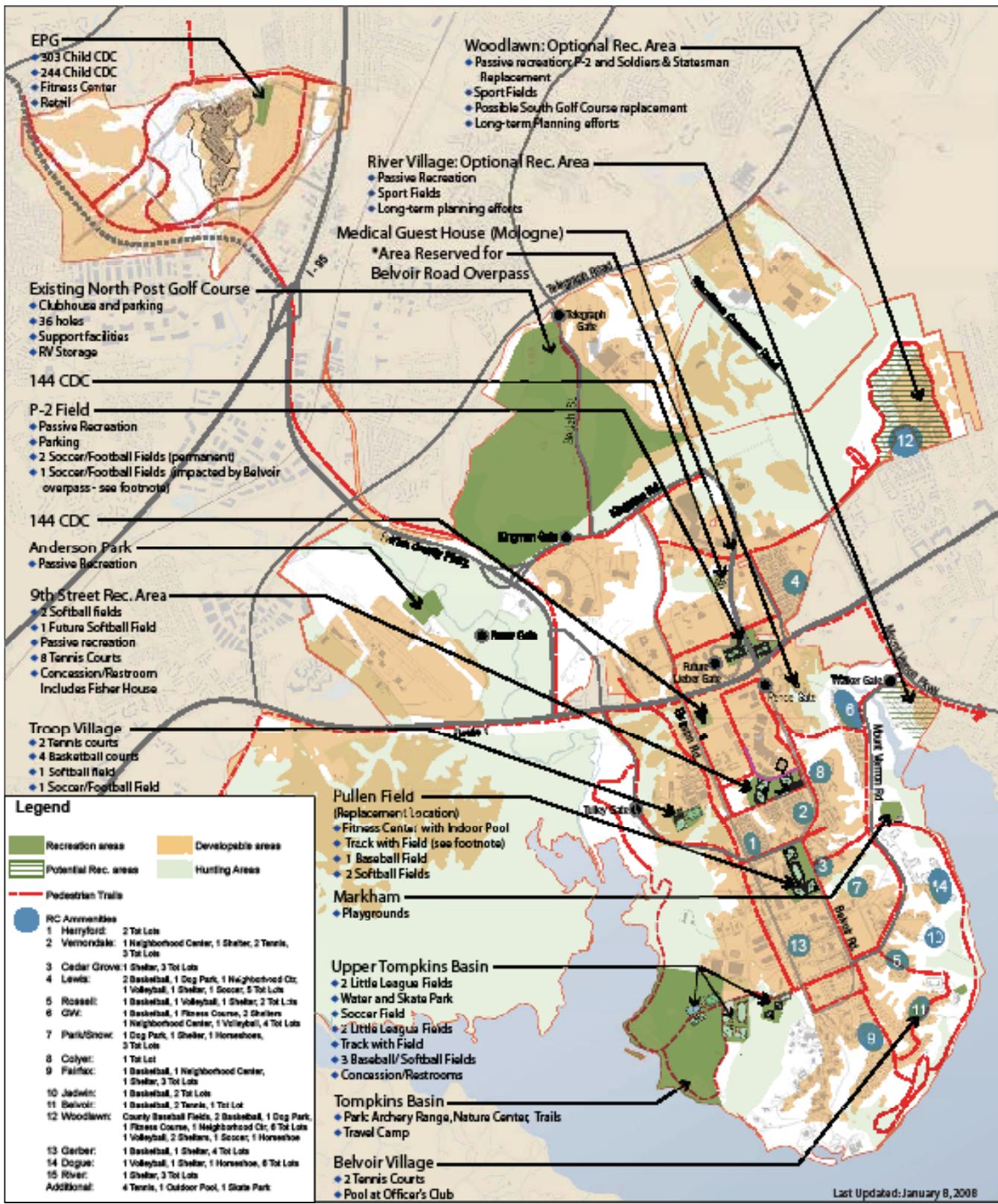
<b>56</b>	<b>Project Totals (pre-certification estimates)</b>	<b>106 Points</b>
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**Certified:** 40-49 points, **Silver:** 50-59 points, **Gold:** 60-79 points, **Platinum:** 80-106 points

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# MWR Recreational Plan

## Appendix E



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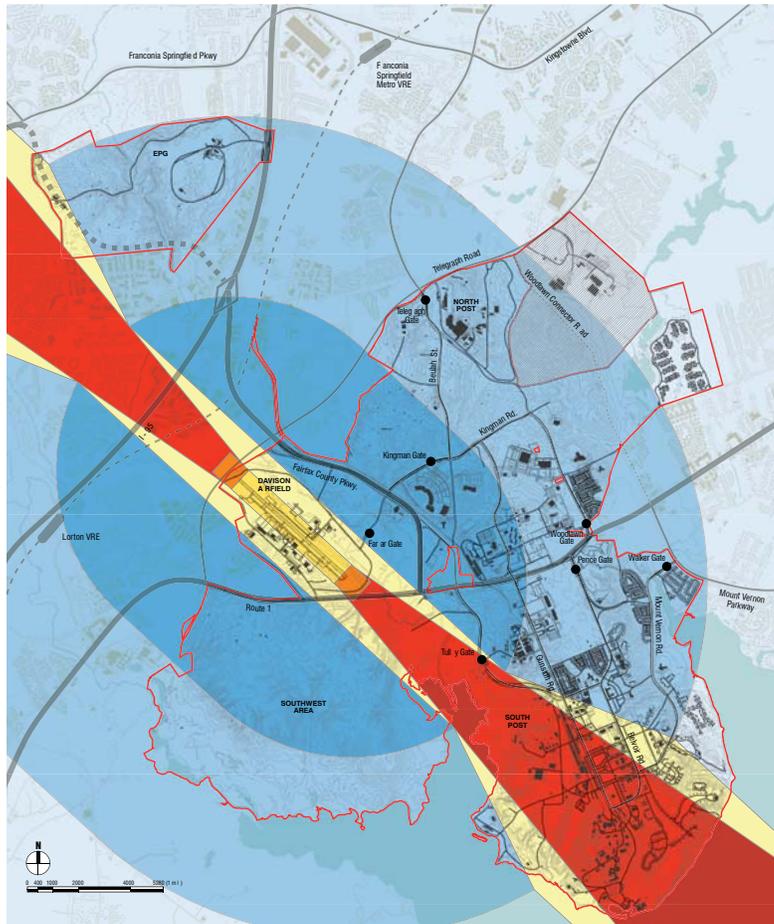
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# **Davison Army Airfield**

# **H Appendix**

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:

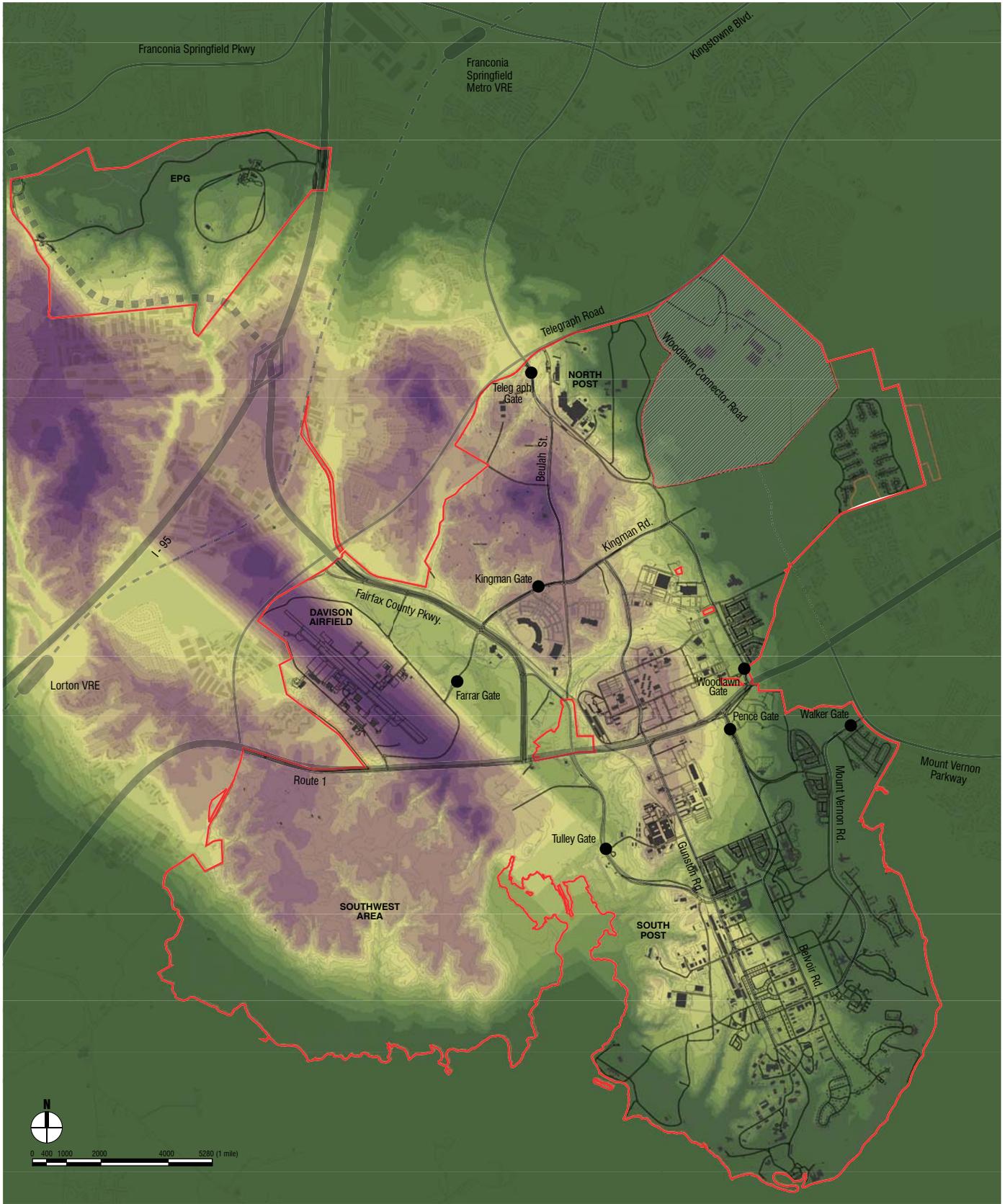
- 12th Aviation Battalion - Rotary
- Operational Support Airlift Agency (OSAA/OSACOM) - Fixed wing
- DC Air National Guard - Rotary
- Aviation Night Vision Lab - Rotary/ Fixed wing
- Civil Air Patrol - Fixed wing

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.

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*

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.