

ENVIRONMENTAL ASSESSMENT
FOR
NATIONAL MUSEUM OF THE MARINE CORPS PHASE II EXPANSION
AT
MARINE CORPS BASE QUANTICO,
Prince William County, Virginia

National Environmental Policy Act (NEPA) Coordination Section
Natural Resources and Environmental Affairs Branch
Installation and Environment Division
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Phase II Expansion

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Abstract: This Environmental Assessment is intended to meet National Environmental Policy Act requirements for the planned expansion of the National Museum of the Marine Corps. The no action alternative, Alternative A, and one action alternative, Alternative B, were examined with another alternative excluded from detailed analysis. Alternative B is the action proponent's preferred alternative.

Alternative B would allow the Marine Corps Heritage Foundation to add approximately 110,000 gross square feet to the existing National Museum of the Marine Corps. This expansion was a part of the Marine Corps Heritage Center Master Plan. Alternative B would not result in impacts to Waters of the United States, impacts to cultural resources, or generation of new permanent hazardous materials/waste. The project also would not significantly impact threatened and endangered species/habitat, or wildlife habitat. Best management practices will be utilized to minimize water quality, air quality, and noise impacts during construction activities. If the stated avoidance/mitigation measures (Section 4.15 of this Environmental Assessment) are executed, the proposed alternative would have no significant impacts on the natural or human environments. Hence, the preparation of an Environmental Impact Statement is not required for this proposed action.

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1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

This Environmental Assessment (EA) was prepared to comply with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (CEQ) 40 CFR parts 1500-1508, and Marine Corps Order P5090.2A which documents the U.S. Marine Corps' internal operating instructions for implementing NEPA. This EA meets the NEPA requirements for Phase II Expansion of the National Museum of the Marine Corps at Marine Corps Base Quantico (MCBQ). The project is being undertaken by the Marine Corps Heritage Foundation (MCHF).

The MCHF directly supports the mission of the National Museum of the Marine Corps (NMMC) to preserve and exhibit the history of the U.S. Marine Corps, honor the commitment, accomplishments, and sacrifices of Marines, and exhibit Marine Corps history and virtues to facility visitors. The NMMC is the centerpiece of the 135-acre Marine Corps Heritage Center (MCHC) which also includes the Semper Fidelis Memorial Chapel, Semper Fidelis Memorial Park, and a playground, as well as the planned supporting Hotel and Conference Center, Macro Artifact Building, and Office Building. Currently, a second egress along U.S Route 1 and a scenic overlook of Semper Fidelis Memorial Park is under construction and expected to be completed by the end of 2014.

1.1 Background

As depicted in Figure 1, the MCHC is located between Interstate 95 (I-95) and U.S Route 1 just south of Virginia Route 619 (Joplin Road). The Final Environmental Impact Statement (EIS) evaluating the MCHC site development was made available June 2001 and the Record of Decision, selecting Locust Shade Park as the development parcel, was signed in September 2001. Completion of the MCHC concept design occurred in 2002 with the updated master plan completed in 2007 by Fentress Bradburn Architects Ltd. Completion of Phase I, the current NMMC structure (building number 1775) and Memorial Park, occurred in 2006. The Memorial Chapel was completed in 2009 and Phase III, the Heritage Center Parkway and Overlook, is currently under construction. Current NMMC exhibits interpret Marine Corps history up through the Vietnam War. The proposed museum addition will add post-Vietnam War era exhibits. The MCHC master plan is depicted in Figure 2.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative A - No Action

Under alternative A, construction would not occur and the next planned phase of the NMMC would not be completed. This is not

Figure 1 Site Location Map



the preferred alternative as the master plan of the MCHC would not be actualized. The full concept of the MCHC was discussed in the 2001 EIS and relayed to the public and stakeholders in the concept and master plans.

2.2 Alternative B - Expand Museum Building 1775 with Access Road and Additional Parking

Alternative B would construct approximately 110,000 gross square feet of museum space to house post-Vietnam War exhibits, a 364-person theater, administrative offices, kitchen/catering and e-commerce spaces, expansion of Tun Tavern, and classrooms. Parking spaces and an access road would be constructed. The estimated new parking would accommodate 92 visitor spaces, 108 staff spaces, and 10 bus spaces. Stormwater controls and

Figure 2 MCHC Master Plan (2007)



antiterrorism/force protection (AT/FP) standards would be included with the project. See Figures 3 and 4 for proposed site improvements.

Alternative B is the preferred alternative to actualize the MCHC master plan.

2.3 Alternatives Dropped from Further Review

In accordance with CEQ guidance, all reasonable alternatives must be rigorously examined within NEPA documentation. Marine Corps Order P5090.2A, Chapter 12, section 12103.1d(2) states that the NEPA process should identify and assess all reasonable alternatives to proposed actions that would avoid or minimize adverse environmental effects. Additionally, the reasons for eliminating alternatives must also be discussed in Environmental Assessments.

Another possible alternative would be to finalize the construction of building 1775 and not include additional land disturbance for the access road and parking. This alternative

was dropped from further review because it is expected that daily visitor numbers will increase with new museum capabilities, requiring additional parking space. Additionally, the theater and classroom additions to the NMMC may support MCBQ training (e.g., Marine Corps University) which would further increase parking needs on an intermittent basis.

Figure 3 Proposed Site Modifications (Pennoni Associates Inc.)

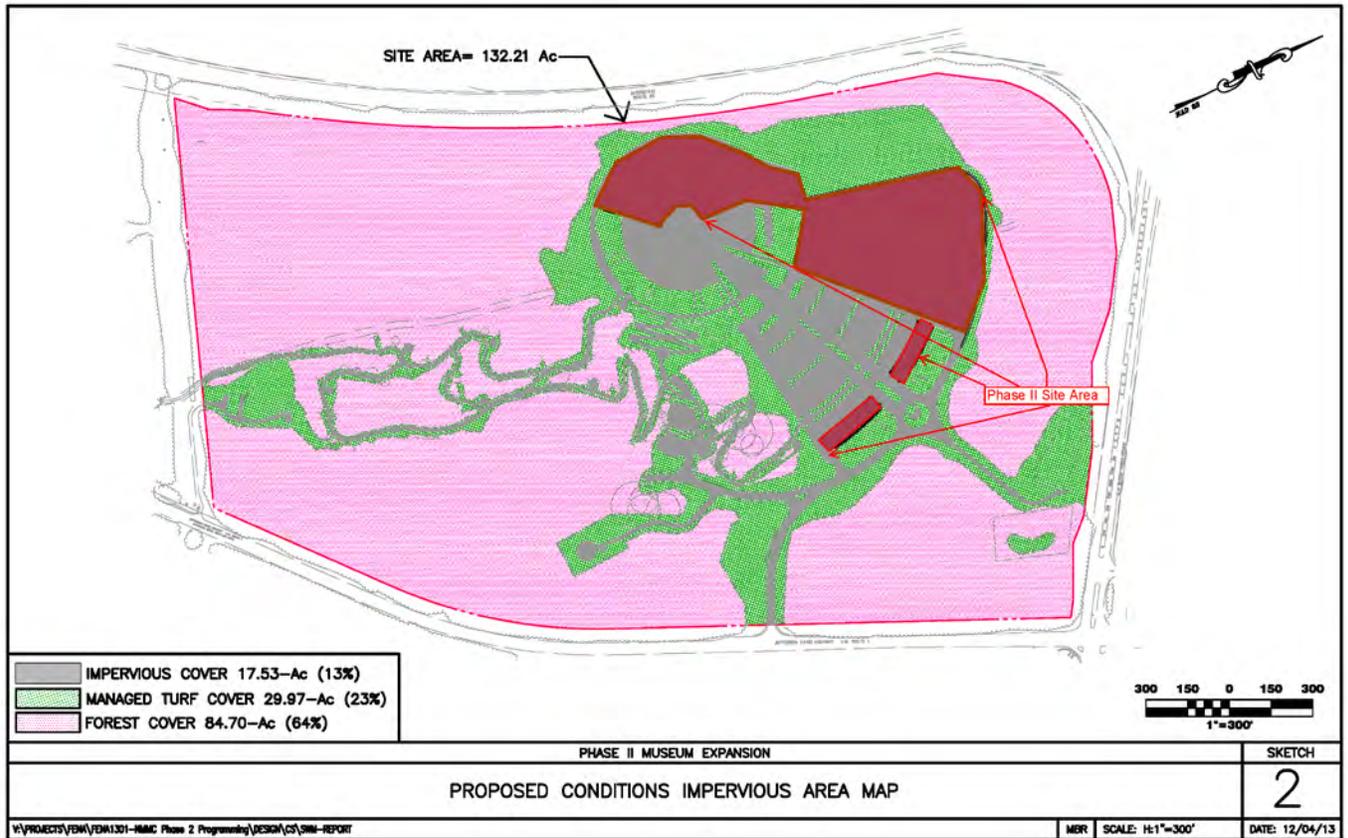
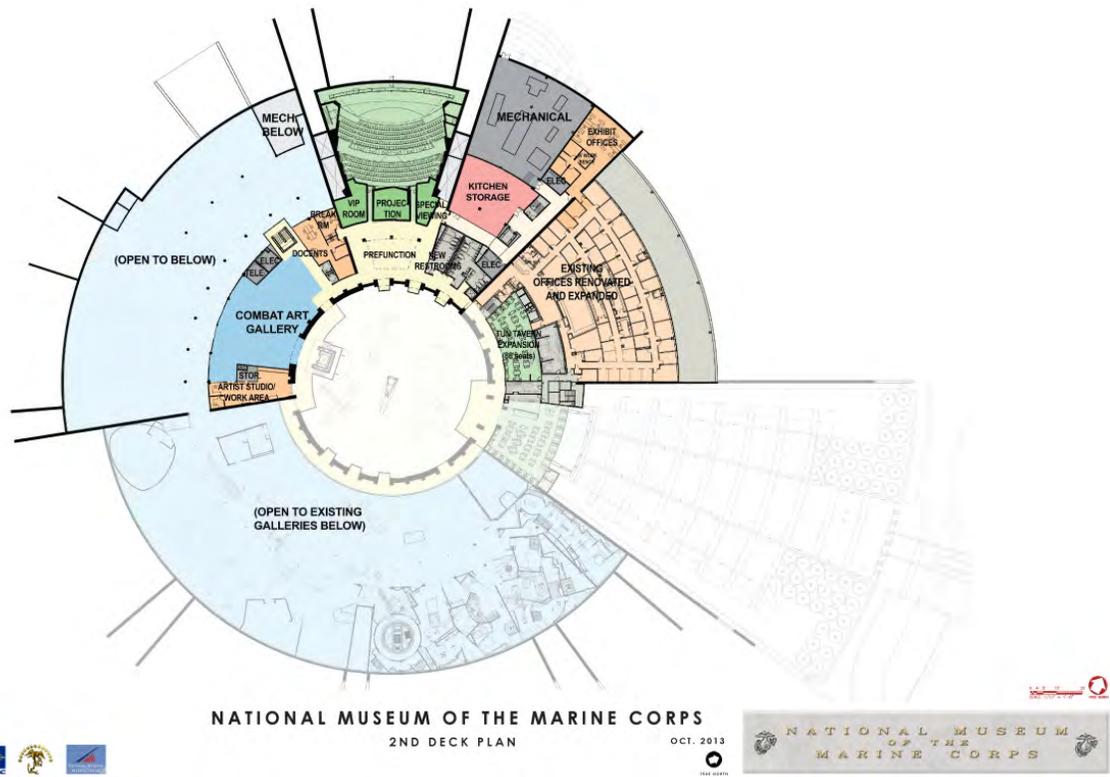
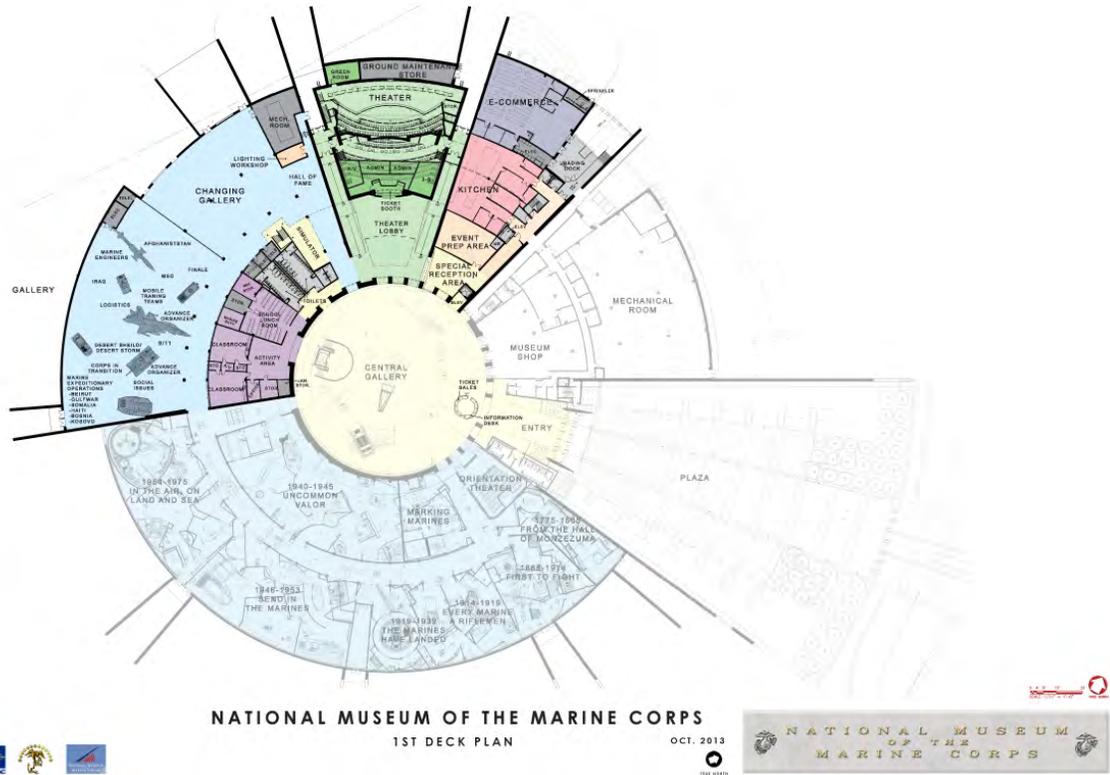


Figure 4 Phase II Building Expansion



3.0 EXISTING ENVIRONMENTAL CONDITIONS

CEQ regulations for implementing NEPA (40 CFR Part 1500) require documentation that succinctly describes the environment of the areas potentially affected by the alternatives being considered.

All the alternatives under consideration for this proposal are located just outside of the Joplin Road Mainside Gate at MCBQ, in Prince William County, Virginia. The existing environmental conditions described in this section will be the same for all alternatives and for the excluded alternative.

3.1 Land Use

MCBQ is divided into two areas; Mainside, 6,000 acres east of Interstate 95 and U.S. Route 1 and; the Westside or Guadalcanal area, 53,200 acres west of the same highways.

The MCHC is located between I-95 and U.S Route 1 just south of Virginia Joplin Road.

Current land configuration can be seen in Figures 1 and 3.

3.1.1 Geology

The proposed action would occur within the Mainside portion of the base, which lies in the Coastal Plain geologic region. The region consists of Mesozoic and Cenozoic marine sediments, some consolidated into sandstone and marl. The project area is specifically within the Patapsco formation, which dates to the Cretaceous Period at the end of the Mesozoic Era. It is comprised of sand and clay from shallow aquatic deposits, which cover Pre-Cambrian crystalline rock with a thickness of approximately 150 feet. These deposits are generally unconsolidated.

3.1.2 Soils

The soils found in the Coastal Plain are the result of the soil formation on the underlying sediments. Many soils within the project area are disturbed due to past construction and road development.

Hydric soils and highly erodible soils can create development constraints or indicate potential environmental impacts. Hydric soils are defined as soils that are saturated long enough during the growing season to develop oxygen deficient conditions in their upper portions and are typically associated with wetlands, streams, or open water. Oxygen-deficient conditions within soils are conducive to the establishment of wetland vegetation.

Hydric soils often contain large amounts of organic material and are not suitable for use in construction.

Highly erodible soils are classified as having an erosion rating index of eight or greater. Often, highly erodible soils are found on steep slopes and are not suitable for use in construction projects.

Four soil units exist at the proposed development site: Lunt loam with seven to fifteen percent slopes (map unit 34C), Aura-Galestown-Sassafras complex with six to fifteen percent slopes (map unit AwD), Caroline fine sandy loam with six to ten percent slopes (map unit CaC2), and Iuka fine sandy loam with up to four percent slopes (map unit Iu).

The site contains one highly erodible soil unit and one partially hydric soil. These potentially problematic soils cover approximately thirty percent of the project site and include:

- Lunt loam (34C) is a well-drained and nearly level soil. This soil is highly susceptible to water and wind erosion. The shrink swell potential of this soil is high which limits use in construction. The depth to the water table is greater than 36 inches. This soil type is not hydric. This soil is highly erodible. This soil unit is found in the northern portion of the project site slated for the access road and parking lot.
- Iuka fine sandy loam (Iu) which is a deep, moderately well drained, nearly level, and partially hydric soil unit. Inclusions within this soil unit often include Bibb series soils, which have a seasonal high water table at a depth of one foot and is hydric. This soil unit is found in the northern portion of the site proposed for the access road and parking lot.

A geotechnical survey should be conducted regarding soils and suitability of planned construction activities. Undercutting and backfilling of soils may be required.

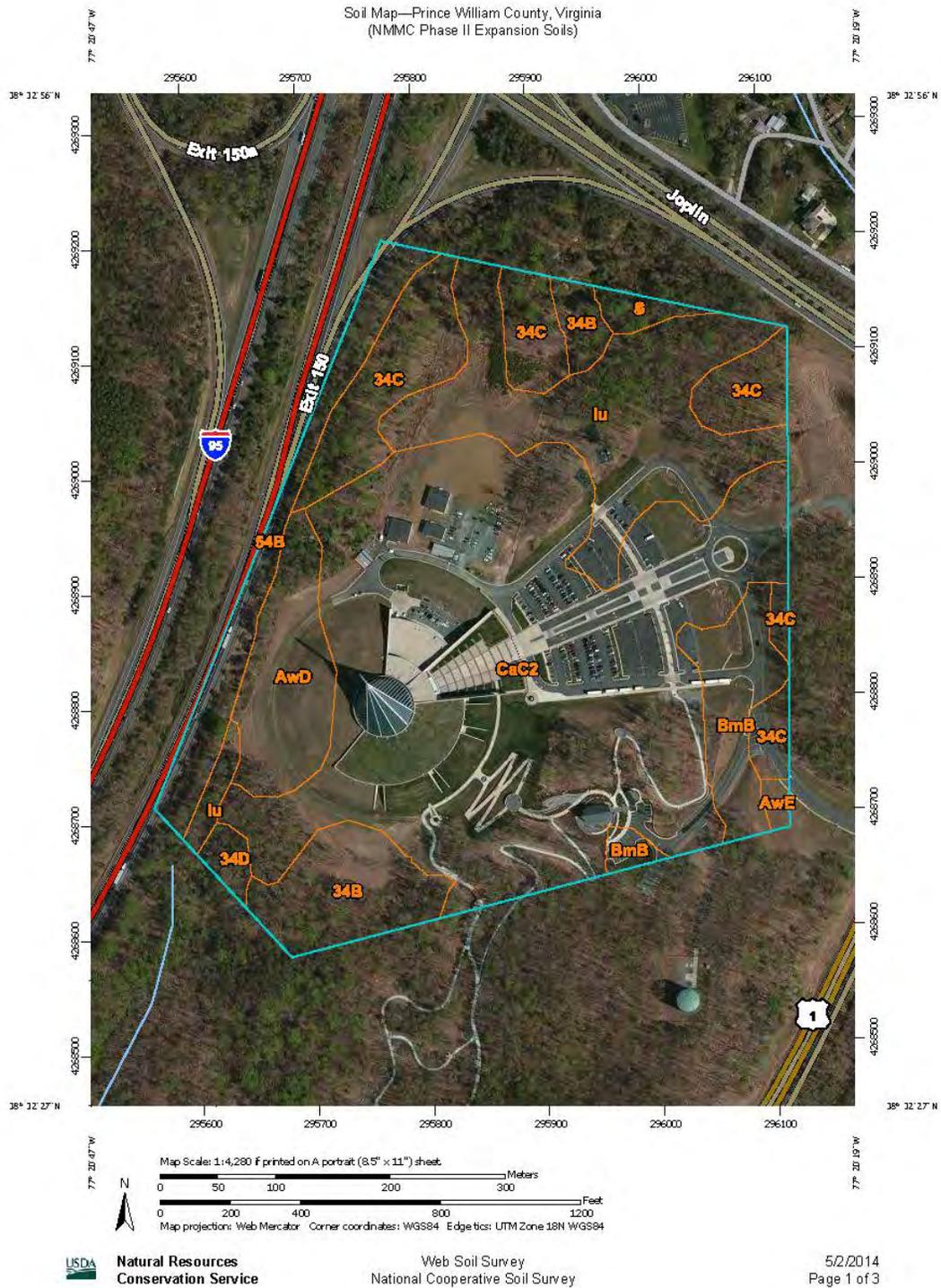
The soils map is included as Figure 5.

3.1.3 Topography

The terrain of the proposed project area consists of nearly level to steep slopes. Elevation at the MCHC generally increases from the existing parking lot to building 1775.

Elevation ranges from 130 to 190 feet above sea level (see Figure 6). Site drainage flows south and east.

Figure 5 Soils Map



3.2 Water Resources

Due to the rugged upper Coastal Plain topography and proximity to various water bodies, activities conducted in the project area could potentially affect the water resources of the area.

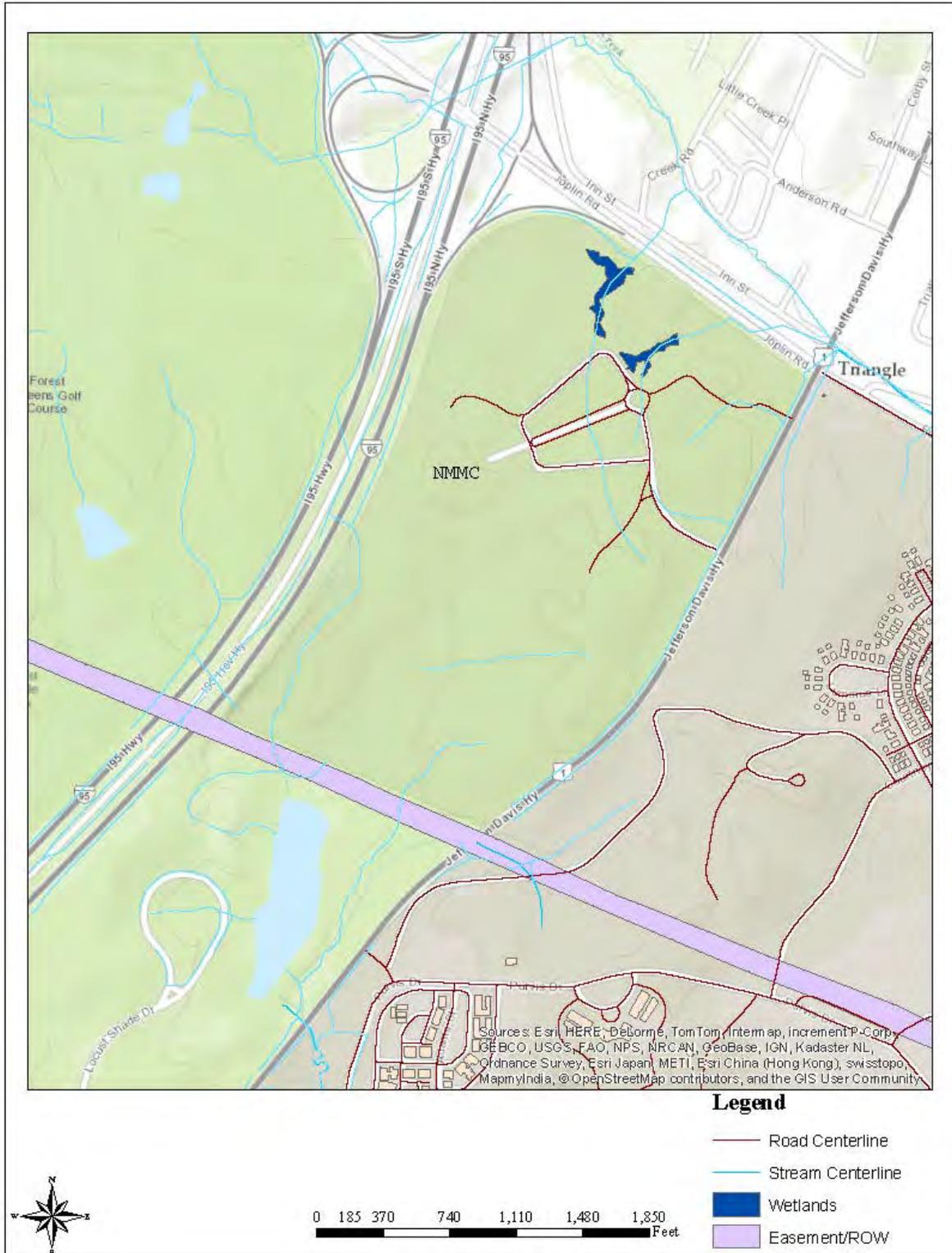
Activities in surface waters (including streams) and wetlands are regulated under numerous federal laws, regulations, and policies. The proposed actions would be bound by the following:

- Section 404 of the Clean Water Act (CWA) (33 U.S.C. § 1344), which requires a permit from the U.S. Army Corps of Engineers (USACE) for the discharge of dredged or fill material into "waters of the U.S." a term that includes most streams, wetlands, and ponds.
- Executive Order (E.O.) 11990, *Protection of Wetlands*, requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

The Commonwealth of Virginia also regulates streams and wetlands that are considered "Waters of the State" through a number of laws and provisions. Any action that requires a federal Section 404 permit may also require a Section 401 water quality certification from the Virginia Department of Environmental Quality (DEQ), and under certain circumstances, the Virginia Marine Resources Commission (VMRC).

In 1988 Virginia enacted the Chesapeake Bay Preservation Act (CBPA) (Code of Virginia § 10.1, Chapter 21). This Act established a cooperative program between state and local governments to improve water quality in the Bay by requiring resource management practices in the use and development of environmentally sensitive land features. As defined by the CBPA, Resource Protection Areas (RPA) are buffer zones that include all areas within 100 feet of a tidal wetland, contiguous non-tidal wetlands, or perennial streams. Other areas are designated as Resource Management Areas (RMA). The RMA includes the 100-year floodplain, highly erodible soils, highly permeable soils, and non-tidal wetlands that are not part of an RPA. The Department of Defense is a signatory to an agreement supporting the CBPA and its associated regulations and will comply to the maximum extent possible consistent with the military mission and budget constraints.

Figure 6 Topographic Map (Includes Wetlands and Streams)



3.2.1 Streams

An intermittent stream is located in the western portion of the MCHC complex approximately 600 linear feet southwest of building 1775. This stream runs south off the property into Locust Shade Pond (Prince William County). Another intermittent stream runs parallel (approximately 400 linear feet east) to the Locust Shade Pond stream. Stream locations were field verified by MCBQ NREA, NEPA Program on 06 May 2014. Streams are depicted in Figure 6.

3.2.2 Wetlands

A two-step process was used to establish the likelihood of wetlands within the proposed project boundaries. Initially, National Wetland Inventory maps and the 2011 delineation covering a portion of the project area were reviewed and then ground-truthed by the MCBQ NREA, NEPA Program. Two wetlands are present at the north corner of the existing NMMC parking lot and one linear wetland located adjacent to the Kings Highway Pond access road.

Secondly, the portions of the site not covered by a recent wetland delineation (within five years) were walked by the MCBQ NREA, NEPA Program on 06 May 2014. No additional wetlands were found.

The 2011 wetland delineation is included as Appendix A. See Figure 6 for wetland locations.

3.2.3 Floodplains

E.O. 11988, *Floodplain Management* requires federal agencies to eliminate/minimize occupancy and modification of floodplains. The order specifically prohibits federal agencies from funding construction in the 100-year floodplain, unless no practicable alternative exists.

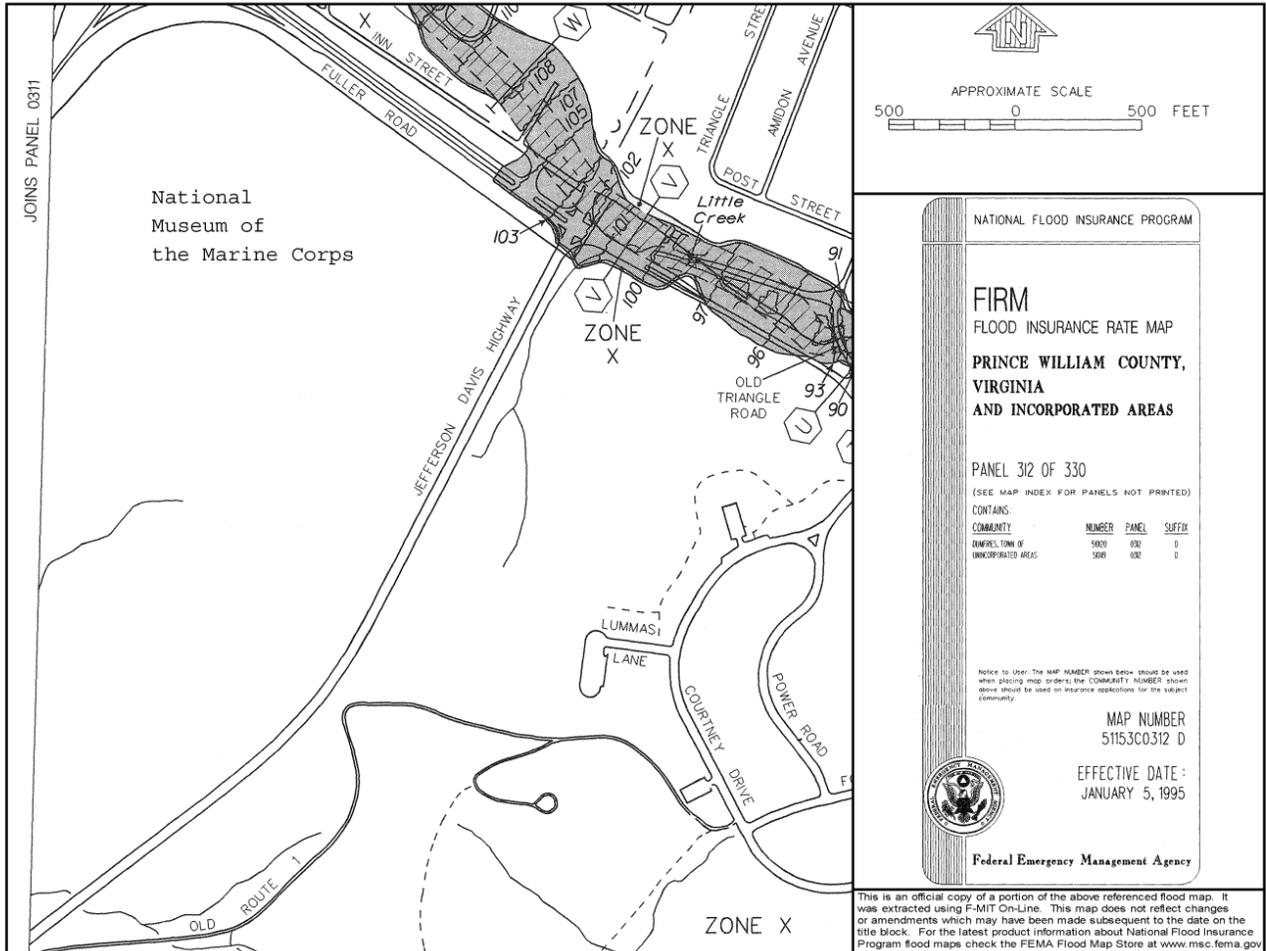
The location of Alternative B was identified on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) numbers 51153C0312D panel 312 of 330. The site is described as being completely within Flood Zone X (unshaded) which is outside of the 500-year floodplain. The FEMA FIRM is included as Figure 7.

3.2.4 Groundwater

A band along the western edge of the Coastal Plain is the groundwater recharge area for underground aquifers that extend eastward under the Chesapeake Bay. MCBQ lies within one of those aquifers, the Potomac Aquifer. In this aquifer water can

be reached at depths between 200 and 350 feet. One of the largest surface recharge areas for

Figure 7 FEMA FIRM



the Potomac Aquifer exists in Stafford County, near Interstate 95 (west of the project site). No comprehensive studies of groundwater resources have been conducted at MCBQ to date.

3.2.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. § 1451, et seq., as amended) provides guidance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. The CZMA states that "the boundary of a State's coastal zone must exclude lands owned, leased, held in trust or whose use is otherwise by law subject solely to the discretion of the Federal Government, its

officers, or agents" (16 USC § 1453 [1]). Accordingly, MCBQ itself is statutorily excluded from Virginia's coastal zone.

Nevertheless, Section 307 of the CZMA mandates that federal projects that affect land uses, water uses, or other coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally-approved coastal management plan. Therefore, if a proposed federal project or activity at MCBQ affects state coastal resources or uses beyond its boundaries Section 307 of the CZMA applies.

The Commonwealth of Virginia has developed and implemented a federally-approved Coastal Zone Management Program (VCP) describing current coastal legislation and enforceable policies. The Virginia VCP has nine enforceable policies which include: wetlands management, fisheries management, subaqueous lands management, dune management, non-point source pollution control, point source pollution control, shoreline sanitation, air pollution control, and coastal lands management.

3.2.6 Stormwater

The proposed project areas are located upslope from significant water resources including Little and Chopawamsic Creeks and their associated tributaries and wetlands. Stormwater runoff from the museum is currently managed in several ways. Building 1775's vegetated roof slows rainwater and drains to the Kings Highway Pond and the bioretention areas located southwest of the current parking lot. Parking lot stormwater flows to the bioretention areas northeast of the parking lot and to the Joplin Road Pond located near the intersection of U.S. Route 1 and Joplin Road. The Heritage Parkway and Overlook drain to the Kings Highway and Joplin Road Ponds and incorporate Low Impact Development (LID) requirements such as dry swales and the green roof.

3.3 Biological Resources

3.3.1 Vegetation

The MCHC consists of a variety of vegetation types ranging from maintained grass and shrubs, hydrophytic vegetation, and mixed and deciduous forest. Forested areas southwest of building 1775 include American holly (*Ilex opaca*), Eastern red cedar (*Juniperus virginiana*), white oak (*Quercus alba*), red oak (*Quercus rubra*), red maple (*Acer rubrum*) in the overstory layer and Virginia creeper (*Pathenocissus quenquefolia*), Japanese honeysuckle (*Lonicera japonica*) and greenbrier (*Smilax spp.*) in

the understory. Wetland complexes consist of American sweetgum (*Liquidambar styraciflua*), tulip poplar (*Liriodendron tulipifera*), and red maple (*Acer rubrum*) with Japanese stilt grass (*Microstegium vimineum*) and *Carex spp.* in the herbaceous layer.

3.3.2 Wildlife and Wildlife Habitat

The MCHC property supports a wide variety of both game and non-game species with its diverse wildlife habitat. Game species include white-tailed deer, wild turkey, gray squirrel, eastern cottontail rabbit and bobwhite quail. Non-game species include resident and migratory songbirds, raptors, and various reptiles, amphibians, and invertebrates.

Migratory birds utilize a variety of habitats available throughout MCBQ including forestland, grassland, wetland, and riparian corridors. Habitat used by migratory birds is located at the MCHC complex. The MCHC is located within the 143 acre Forest Compartment 79 and also contains some maintained shrubs and grass. Wetland areas are also located north and south of building 1775.

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. § 703 et seq.) protects all species covered by the four migratory bird treaties the United States signed with Canada, Mexico, Japan, and Russia. The MBTA prohibits taking, killing, or possessing of migratory birds (including parts, feathers, nests, and eggs) unless permitted by the Secretary of the Interior. The United States Fish and Wildlife Service (USFWS) currently recognizes 832 species of migratory birds covered by the MBTA.

Per E.O. 13186, *Responsibilities of Federal Agencies to Migratory Birds*, the Department of Defense (DoD) and USFWS established a Memorandum of Understanding (MOU) to promote the conservation of migratory birds. The MOU pertains to installation support functions such as the construction and operation of administrative/support facilities, commissaries, military exchanges, shops, road construction, and welfare/recreation activities.

Neotropical migratory birds breed in North America and migrate to Central and South America to overwinter. The wood thrush (*Hylocichla mustelina*), scarlet tanager (*Piranga olivacea*), and red-eyed vireo (*Vireo olivaceus*) are common neotropical migrants found in mature MCBQ forests. Much research is ongoing nationwide to determine the factors affecting the population densities and breeding success of these species.

Bald Eagles, which are protected under the MBTA, are discussed within the threatened and endangered species/species of concern portion (3.3.3) of this EA.

3.3.3 Threatened and Endangered Species/Species of Concern

The Endangered Species Act (16 U.S.C. § 1531 et seq.) requires federal agencies to ensure that their actions will not jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of its critical habitat.

Three plant species on MCBQ are listed as federally threatened or endangered, including harperella (*Ptilimnium nodosum*), small whorled pogonia (*Isotria medeoloides*), and sensitive joint-vetch (*Aeschynomene virginica*).

Harperella is a federally-listed endangered plant species native to riverine habitats. This plant is only found in 13 areas ranging from Maryland to Georgia. Harperella has been historically found along Aquia Creek, which is located along the southern boundary of the installation.

The small whorled pogonia (SWP) is a federally-listed threatened species. The SWP is a perennial plant that generally occurs on gentle to moderate slopes with eastern or northern exposures and prefers acidic sandy loam soils with low nutrient content. There are approximately 15 known MCBQ colonies of SWP. During early planning phases, it was determined that the proposed project site could not be eliminated as potential SWP habitat.

Sensitive joint-vetch is a federally-listed threatened species. This plant is an annual legume that prefers slightly brackish tidal river systems and exists along the Potomac River.

One animal species, the dwarf wedge mussel (*Alasmidonta heterodon*) is federally-endangered. This small bivalve lives in freshwater streams and requires highly oxygenated and silt-free waters. This species has historically been found within the Aquia Creek watershed. An updated species survey is being conducted during the summer of 2014.

The Bald Eagle, *Haliaeetus leucocephalus*, was removed from the Federal List of Endangered and Threatened Wildlife and Plants in 2007 due to population recovery. The Bald Eagle is still afforded federal protection under the MBTA (see Section 3.3.2) and the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. § 668 et seq.), and is considered a species of concern under the

ESA. The BGEPA requires a buffer of 660 feet around an eagle nesting site. A Bald Eagle nesting site has historically been observed along Chopawamsic Creek approximately two miles south of the MCHC.

According to Chief of Naval Operations Instruction (OPNAVINST) 5090.1B, it is Navy and Marine Corps policy to cooperate with states to protect state-listed species, if mission compatible. Hence, MCBQ also considers project impacts to Virginia-listed rare species and state listed species during the NEPA process.

The Virginia Piedmont waterboatman, *Sigara depressa*, and the brook floater, *Alasmidonta varicose*, are two listed state endangered faunal species. Both species are water dependent. The Virginia Piedmont waterboatman is an insect that inhabits ponds and extremely slow moving streams. The brook floater is a bivalve that is found in clean consistently moving streams in gravel or sand substrates.

3.4 Cultural Resources

Implementation of proposed federal actions must comply with the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. § 470 et seq., as amended). Under the NHPA, consideration of historic preservation issues must be integrated into the early stages of project planning by federal agencies. Under Section 106 of the NHPA, a federal agency is required to account for the effects of proposed actions on any district, site, building, structure, or object that is included or eligible for inclusion in the National Register of Historic Places (NRHP), prior to the expenditure of funds on the action. Section 110 of the NHPA requires the identification and evaluation of any cultural resources on federal property that meet the eligibility criteria of the NRHP.

A Phase I Archaeological Survey was conducted for the area in 1999 in conjunction with the 2001 Marine Corps Heritage Center Environmental Impact Statement (EIS). The following sites were identified and determined to not be eligible for listing in the NRHP at the time: site 44PW1042 is the Sisson Cemetery (19th-20th century), 44PW1043 is a 20th century bottle dump, 44PW1044 is a historic site (unidentified), sites 44PW1045, 44PW1046, 44PW1047, and 44PW1048 are prehistoric sites (unidentified). Another archaeological survey was conducted in 2010 near the Old Kings Highway (south of building 1775). No cultural resources were identified in this survey. The Virginia Department of Historic Resources (serves as the State Historic Preservation Office, or SHPO) concurred with these surveys (DHR files 1998-

0842 and 2010-1186). Concurrence letters are included as Appendix D.

3.5 Air Quality

The U.S. Environmental Protection Agency (EPA) defines ambient air (40 CFR Part 50) as "that portion of the atmosphere, external to buildings, to which the general public has access." In compliance with the 1970 Clean Air Act (CAA) (42 U.S.C. § 7401 et seq., as amended), the EPA has produced national ambient air quality standards (NAAQA) and regulations for six criteria pollutants: carbon monoxide, sulfur dioxide (SO₂), particulate matter (PM) at two levels-particles with a diameter less than or equal to a nominal 10 micrometers (PM₁₀) and less than or equal to a nominal 2.5 micrometers (PM_{2.5}), ozone, nitrogen dioxide (NO_x), and lead.

Areas that do not meet NAAQS are called non-attainment areas. MCBQ is located in a moderate ozone non-attainment area within the Ozone Transport Region, and in a PM_{2.5} non-attainment area. The General Conformity Rule (CAA Section 176(c)(4)) ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state's plans to meet the NAAQS.

The General Conformity Rule plays an important role in helping states improve air quality in those areas that do not meet the NAAQS. Under the General Conformity Rule, federal agencies must work with State, Tribal, and local governments in a nonattainment or maintenance area to ensure that federal actions conform to the air quality plans established in the applicable State Implementation Plan (SIP).

In order to target federal projects which have the greatest impact on regional air quality, EPA established *de minimis* thresholds under the General Conformity Rule. *De minimis* thresholds are pollutant-specific and specify the maximum allowable emissions from a project before a formal conformity determination must be prepared. Federal agencies do not need to prepare conformity determinations for actions that do not exceed these *de minimis* thresholds.

Additionally, several types of federal actions are automatically exempt from the General Conformity Rule without regard to their emissions. Actions such as routine repair of facilities and roads, routine transport of materiel and personnel, routine movement of mobile assets, and others are listed as exempt in 40 CFR 93.153(c)(2). Any equipment that requires a permit to

construct and operate under a state's New Source Review program is exempt from General Conformity, as well as any other action specifically accounted for in the SIP.

A federal agency must perform a General Conformity applicability analysis prior to initiating any non-exempt action that will cause emissions of criteria pollutants for which the area is designated nonattainment or maintenance. The analysis must include reasonable estimates of direct emissions (caused by the action; occur at the same time and place) and indirect emissions (caused by the action; may occur later in time or in a different location than the action). The analysis must be performed for each year of the action and one year of typical operations. If the analysis indicates that the emission levels are below *de minimis* thresholds for all years, then no further action is necessary.

The pollutant *de minimis* criteria for the General Conformity Rule are 50 tons per year (tpy) for volatile organic compounds (VOC), 100 tpy for NO_x, 100 tpy for PM_{2.5}, and 100,000 tpy for CO₂.

3.5.1 Climate Change

Greenhouse gases (GHG) are atmospheric compounds that contribute to the greenhouse effect. GHGs include CO₂, CH₄, and N₂O, and fluorinated gases. The greenhouse effect is a natural phenomenon that causes heat to be trapped within the lowest portion of the earth's atmosphere creating a wide range of environmental concerns referred to as climate change. Climate change is associated with rising global temperatures, sea level rise, changing weather patterns, changes to local and regional ecosystems, including the potential loss of species, longer growing seasons, and shifts in plant and animal ranges. Most GHGs occur naturally within the atmosphere, but scientific evidence indicates a trend of increasing global temperature over the past century due to a combination of natural occurrences and an increase in GHG emissions from human activities (International Panel on Climate Change 2007).

According to the Quadrennial Defense Review Report of February 2010, the DoD has recognized that climate change will affect the DoD operating environment, roles, and missions undertaken; furthermore, adjustments due to climate change impacts on facilities and military capabilities will be necessary. The DoD has made a commitment to foster efforts to assess, adapt to, and mitigate the impacts of climate change. Specifically, the DoD has leveraged the Strategic Environmental Research and

Development Program, a joint effort among the DoD, the Department of Energy, and the EPA, to develop climate change assessment tools.

CEQ's NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions states that "if a proposed action would be reasonably anticipated to cause direct emissions of 27,563 tpy (25,000 metric tons) or more of CO₂-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public." These recommendations are consistent with the EPA's Mandatory Reporting of Greenhouse Gases (Mandatory Reporting) rule (40 CFR Part 98), which applies to all stationary sources emitting 27,563 tpy or more of CO₂-equivalent GHG emissions. The Mandatory Reporting rule allows for data collection to help shape future climate change policies and programs, but does not require control of GHGs. MCBQ adheres to CEQ's guidance on evaluating a project's impact on climate change and GHG emissions during the NEPA process.

3.6 Noise

Noise, defined as unwanted sound, is a prevalent human environment concern in and around military installations. The major sources of noise at MCBQ include aircraft, artillery, small arms, explosives, vehicles, heavy equipment, and machinery.

Existing noise levels around the MCHC are primarily from air operations at the nearby Marine Corps Air Facility (Turner Field) and ranges located west of I-95. Ordnance used in live and simulated fire exercises is generally conducted at ranges on the western side of the base, approximately four miles from the proposed project area. Other noise contributions come from interstate (I-95) and highway (U.S. Route 1) traffic and construction. The I-95 High Occupancy/Toll (HOT) lanes are currently being constructed (by others) immediately west of the MCHC. The HOT lane completion date is expected to be early 2015. Noise from the HOT lane construction activities is minor and short in duration. Noise from normal vehicle operation is common in the project vicinity.

3.7 Infrastructure, Utilities, and Transportation

The site has a well-developed infrastructure; utilities and services are readily available.

3.7.1 Utilities

Utilities such as water, sewer, electrical, natural gas, and fiber optic communication cable extend to the facility from along U.S. Route 1. Water and sewer service is provided by Prince William County, electricity by Dominion Virginia Power, natural gas from Columbia Gas Company, Inc. and communications from Verizon and government networks. No underground storage tanks for fuel are located under or adjacent to the MCHC. A utility easement is located immediately south of the MCHC and traverses the main side of MCBQ. Dominion Virginia Power maintains the utility line.

3.7.2 Transportation

Access to the MCHC is accomplished via U.S. Route 1. Currently, a second ingress/egress is under construction (the Heritage Center Parkway) and is expected to be completed in 2014. A traffic impact analysis (TIA) was conducted in 2011 for the buildout estimate of 2016 for the MCHC. The study also reflects traffic impacts through the year 2022. Recommended modifications along U.S. Route 1 are included in the Heritage Center Parkway construction project evaluated under a separate NEPA document.

The TIA executive summary is included as Appendix C. The complete study will be provided upon request.

3.8 Hazardous Materials/Waste and Solid Waste

There are no known existing hazardous materials or waste within the proposed project area. Hazardous materials such as paints, solvents, etc. are in use at the existing NMMC facility. All materials are utilized per applicable state and federal regulations.

Solid waste produced within the MCHC is taken to the Prince William County landfill. A recycling program is also in effect at the MCHC. Solid waste and recycled material volumes are reported yearly to the NREA, Solid Waste Program Manager.

E.O. 13514, *Leadership in Environmental, Energy, and Economic Performance*, calls for meeting or exceeding fifty percent diversion of non-hazardous solid waste and sixty percent diversion of and construction and demolition debris from landfills by fiscal year 2015.

3.9 Recreation

MCHC, in its entirety, is located within a no hunting zone. There are no hunting or fishing resources at the MCHC.

Recreation/tourist facilities at the MCHC include the NMMC, the memorial park, memorial chapel, and the playground.

Locust Shade Park is situated south of the MCHC and is a public recreation facility managed by Prince William County.

3.10 Military Training

The MCHC property does not currently serve as a military training area aboard MCBQ.

3.11 Environmental Justice

E.O. 12898, *Federal Actions to address Environmental Justice in Minority Populations and Low-income Populations*, was issued in 1994. This order directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal policies and actions on these groups. The proposed action will not involve effects specific to minority or low-income populations.

E.O. 13045, *Protection of Children from Environmental Health and Safety Risk*, was issued in 1997. This order requires agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children. Children are more likely than adults to be adversely affected by environmental contaminants. The proposed project will occur immediately adjacent to public lands maintained by Prince William County, private residences, public highways, and MCBQ.

Population data reveals that census tracts surrounding the project area have higher percentages of minorities, low-income families than Prince William and Stafford Counties as a whole.

4.0 ENVIRONMENTAL CONSEQUENCES

The CEQ regulations implementing NEPA (40 CFR Part 1500) requires impacts discussion, in proportion to their significance, within NEPA documentation. The affected environment under the proposed action alternative ranges from site-specific physical and natural resources to broader regional concerns (i.e., air quality variables, noise, infrastructure, socioeconomic conditions, community facilities and services, transportation and traffic).

This section describes the anticipated direct, indirect, and cumulative environmental impacts of the no action alternative and the action alternative for the NMMC Phase II expansion.

Alternative A is no action and Alternative B is the proposed action. As discussed in Section 2.3 of this EA, no other viable alternatives were identified. Best management practices and measures to mitigate potential impacts are covered in section 4.15.

4.1 Land Use

Impact of Alternative A: Under the no action alternative, the NMMC would not be expanded and the MCHC master plan would not be actualized. There would be no new impacts to land use under alternative A.

Impact of Alternative B: Extensive vegetation clearing will not be required to complete Phase II of the NMMC expansion. The majority of the area slated for construction was cleared during Phase I of the MCHC. Minor vegetation clearing will be required for the additional parking and perimeter access road located within the north/northwest portion of the MCHC parcel. The concept plan for this project does not show marketable timber being removed. Timber is considered real property and the project budget must allow for payment of the timber at fair market value. In the event the concept plan changes and overstory trees need to be removed, a timber assessment must be completed by MCBQ Forestry prior to tree removal and the project budget must allow for timber reimbursement.

Invasive species must not be planted as a component of this project. It is recommended that landscape plantings be compliant with the Base Exterior Architecture Plan. The plant palette is included as Appendix E.

Soils will be disturbed as a part of this project and potential impacts and mitigations to minimize soil movement are included in Sections 4.2 and 4.15 of this EA.

The current land use is a museum and memorial park. Alternative B improvements would be of similar use. Alternative B would not result in significant land use changes.

4.2 Water Resources

Potential impacts to water resources were assessed based on water quality, hydrology, surface water and wetlands, groundwater, and flooding potential in the project area.

Impact of Alternative A: This alternative does not involve alteration of wetlands, surface waters, or associated hydrology.

Alternative A would not result in new impacts to water resources.

Impact of Alternative B: As depicted in Figure 6, several streams and wetlands have been identified within the project vicinity. The concept plan has been developed to avoid impacts to these waters; however, in the unlikely event that there will be stream and wetland impacts, the appropriate USACE and DEQ permits will be required. Dependent on impact type, permit requirements will be completed through the Joint Permit Application (JPA) or Nationwide Pre-Construction Notification process. A re-construction notification is directly submitted by the contractor to USACE, whereas a JPA is submitted by the contractor to the VMRC for distribution to USACE and DEQ. To comply with Section 404 of the CWA, all avoidance and minimization measures must be examined and used to the greatest extent practicable. If mitigation is required for wetland/stream impacts, credits must be purchased from an approved mitigation bank within Hydrologic Unit Code Lower Potomac 02070011. Nearby wetlands must be field flagged prior to land disturbance to avoid inadvertent disturbance or fill.

The proposed action alternative would not require fill within the 100-year or 500-year floodplains. The 100-year floodplain is considered a RMA under the CBPA. None of the onsite wetlands are contiguous to a perennial stream and do not have associated RPAs. The streams located in the western portion of the site are perennial and require an RPA. According to the concept plan, these streams and RPA will not be impacted.

It is expected that a large amount of soil will be excavated from the site for the museum expansion. All soil stockpile areas must be appropriately stabilized and placement of soil within Waters of U.S. or Waters of the State will not be permitted.

The project will disturb more than one acre of land and therefore requires that an Erosion and Sediment (E&S) control plan with narrative, Stormwater Pollution Prevention Plan (SWPPP), and a Virginia Stormwater Management Program (VSMP) permit application be submitted to the NREA Branch's Water Programs Manager for review and approval at least 70 days prior to land disturbing activities (see Section 8.0 for contact information). The project must be compliant with the new VSMP regulations, 9VAC25-870 effective 1 July 2014. The project must provide no net increase in volume or nutrient loadings per the Energy Independence and Security Act (EISA) Section 438 and the

Navy's Low Impact Development (LID) Policy. The NREA *Erosion and Sediment Control, Stormwater Pollution Prevention and Low Impact Development (LID) on MCB Quantico* (2013) application and design guidance document should be followed to eliminate approval delays. Undercutting of soil will also require proper erosion and sediment controls.

The two existing bioretention areas east of the parking lot will be converted to parking spaces (new impervious surface). This reduction of LID features must be accounted for during site plan development. Bioretention areas, vegetated roof, and swales are proposed within the concept plan and are typically compliant with LID requirements.

The proposed action alternative is consistent to the maximum extent practicable with the enforceable policies of the VCP. The proposed project is not expected to have adverse effects on Virginia fisheries, shorelines, subaqueous lands, dunes, or coastal lands. Although not expected from the concept plans, impacts to wetlands and streams would be mitigated per section 4.15.1 of this EA. A Federal Consistency Determination, as required under the VCP will be submitted to DEQ and consultation will be completed before finalizing EA decision documents.

4.3 Biological Resources

Impact of Alternative A: Implementation of the no action alternative, would not have a significant impact on vegetation, wildlife (including migratory birds), or threatened/endangered species.

Impact of Alternative B: The action alternative is compliant with the MBTA and the BGEPA. The nearest historical nest is approximately two miles south of the project area which is well outside of the 660 foot buffer required under the BGEPA.

Limited tree clearing will occur for the building addition. A SWP survey was conducted on 12 July 2013 and most of the project area was deemed unsuitable habitat. There were no specimens found within the potential habitat areas. Sensitive habitats will not be removed as a part of this project. See Appendix B for threatened and endangered survey memorandum.

Water resources that support the dwarf wedge mussel, harparella, sensitive joint-vetch, waterboatman, and brook floater will not be affected. Best management practices to avoid water quality degradation during construction will be followed to avoid downstream sediments (see Section 4.2 and 4.15.1).

While forest segmentation reduces the amount of contiguous habitat that is available for migratory birds, site clearing associated with the action alternative would not significantly affect the available forestland available. The majority of migratory birds listed under the MBTA on MCBQ are waterfowl species. No wetlands or open water will be significantly affected by the proposed construction activities.

Additionally, MCBQ is committed to supporting migratory bird data collection and monitoring. In 1995, MCBQ enrolled three bird-banding stations in the Monitoring Avian Productivity and Survival (MAPS) program and has been operating these stations annually. In 2000, a two-year study involving the feeding ecology of neotropical birds during the fall migration was initiated. Additionally, the Marine Corps continues to be an active participant with the Partners in Flight program which a nationwide program to study and manage neotropical migratory birds that breed in North America and migrate to Central and South America to overwinter and habitat conservation efforts integrated into installation management are detailed within the MCBQ Integrated Natural Resources Management Plan.

Construction noise can affect wildlife and influence behavior and movement patterns. A forested buffer will be in place on the southern portion of the construction site which will lessen the amount of transmitted noise. The remainder of the proposed construction area is already disturbed/developed areas. Construction noise is unavoidable but temporary.

The proposed action will not have significant impacts on threatened and endangered species, migratory birds, or habitats used by these species.

4.4 Cultural Resources

Under Section 106 of the NHPA, a federal agency is required to account for the effects of the proposed action on any historic district, site, building, structure, or object that is included or eligible for inclusion in the NRHP, prior to the expenditure of funds on the action.

Section 110 requires the identification and evaluation of any cultural resources (including archaeological sites) on federal property that meets the eligibility criteria of the NRHP.

Impact of Alternative A: This alternative would not include land disturbance or development so cultural resources would not be affected.

Impact of Alternative B: Past archeological surveys within the MCHC parcel located seven archaeological sites: Sites 44PW1042, 44PW1043, 44PW1044, 44PW1045, 44PW1046, 44PW1047, and 44PW1048. All sites were determined not eligible for listing in the NRHP. The SHPO concurred with these surveys documented as DHR files 1998-0842 and 2010-1186. Concurrence letters are included as Appendix D. Planned construction and ground disturbances associated with Alternative B will not affect cultural resources.

Although the site has been covered by past archaeological surveys, there is always the potential for unexpected discoveries. In the event potential human remains (e.g. bones, bone fragments) are discovered, work must be halted or diverted to other areas until appropriate measures are taken. Contract Project Managers must be informed that any human remains encountered are protected by state and federal law. The following procedures must be followed:

- Halt work at the location leaving remains in place and any associated features and objects
- Notify Base Archaeologist/NEPA Section per Section 8.0 of this EA
- Redesign project to avoid remains, if possible
- Base Archaeologist/NEPA Section will contact SHPO, and if remains are Native American will contact tribe(s)
- Removal of remains requires a permit from the SHPO, including the participation of a skeletal biologist or physical anthropologist, and plans to make appropriate notifications to possible descendants/relatives and other measures in accordance with state law and Advisory Council on Historic Preservation guidelines

4.5 Air Quality

MCBQ is located in a moderate ozone non-attainment area within the Ozone Transport Region, and in a PM_{2.5} non-attainment area.

The General Conformity Rule ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state's plans to meet the NAAQS.

Impact of Alternative A: Alternative A will not have an effect on air quality as no new construction would occur and no new emissions sources added.

Impact of Alternative B: The expected potential air pollutants associated with alternative B would include emissions from asphalt paving activities, construction activities/equipment, crew commuting vehicles, fugitive dust, and from use of other fuel-burning equipment. New climate control equipment, one boiler and one cooling tower, would be added with the museum expansion. New HVAC components will be reported to the Air Program Manager, NREA (see section 8.0 for contact information). Installation of HVAC components will be conducted by technicians who completed a program compliant with 40 CFR 82.161 and approved by the EPA for work on ozone depleting substance equipment.

The existing NMMC 250 kilowatt emergency diesel generator is expected to be sufficient for the added building space and replacement or supplementation is not anticipated. In the event a larger emergency generator is required, the NREA's Air Program Manager must be notified in order to make the appropriate permitting determinations.

The direct and indirect emissions associated with alternative B are not expected to exceed General Conformity Rule *de minimus* emissions levels based on concept site plans. General Conformity analysis will be conducted as more specific project design information becomes available. A Record of Non-applicability for General Conformity, if applicable, will be completed as the project moves forward.

The contractor in charge of construction will be responsible for ensuring compliance with the Fugitive Dust Standard to avoid/lessen air impacts. As stated in the Title V Operating Permit for MCBQ, Section XV.N, Fugitive Dust Emission Standard:

"During the operation of a stationary source or any other building, structure, facility or installation, no owner or other person shall cause or permit any materials or property to be handled, transported, stored, used, constructed, altered, repaired, or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such precautions may include, but are not limited, to the following:

- Use, where possible, of water or chemicals for control of dust in demolition activities (including road surfaces),

from use of quicklime, construction operations, the grading of roads, or the clearing of land;

- Application of asphalt, water, or suitable chemicals on dirt roads, materials stockpiles, and other surfaces which may create airborne dust; the paving of roadways and the maintaining of them in a clean condition;
- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty material. Adequate containment methods shall be employed during sandblasting or other similar operations;
- Open equipment for conveying or transporting material likely to create objectionable air pollution when airborne shall be covered or treated in an equally effective manner at all times when in motion;
- The prompt removal of spilled or traced dirt or other materials from paved streets and of dried sediments resulting from soil erosion."

The proposed action would produce a minor change in air emissions from the use of construction equipment and HVAC components. The new climate control components would not affect the MCBQ's Title V Operating Permit. Annual emissions statements will continue to be submitted as required by the permit.

The action alternative would not significantly impact the current air quality conditions at MCBQ or the Metropolitan Washington non-attainment area.

4.5.1 Climate Change

CEQ's NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions states that "if a proposed action would be reasonably anticipated to cause direct emissions of 27,563 tpy (25,000 metric tons) or more of CO₂-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public."

Impact of Alternative A: The no action alternative would not cause an increase in greenhouse gas emissions and would not have new effects on climate change. A detailed quantitative and qualitative assessment is not required.

Impact of Alternative B: Museum exhibit space requires consistent temperature and humidity levels to maintain artifact condition. The NMMC expansion would constitute approximately 110,000 gross square feet. The proposed project would involve

one new chiller and one new boiler to support the new museum space. This equipment will not produce a significant change in GHG emissions.

Construction emissions are short in duration and are not covered by the Mandatory Reporting of Greenhouse Gases rule as the intent is to track and regulate stationary sources. This project would not have any significant changes in stationary or mobile emission sources or landfill operations.

MCBQ address GHG emissions by meeting demands of laws, E.O.s, and policies relating to air quality, GHGs, and climate change. The proposed project will be compliant with E.O. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* which establishes GHGs as the integrating metric for tracking progress in federal sustainability, requires a deliberative planning process, and links to budget allocations to ensure goal achievement. E.O. 13514 calls for a 34 percent reduction of GHG by 2020. The Marine Corps Base Quantico Sustainability Plan was developed in 2013 and implementation will be the primary method MCBQ will reach the GHG reduction goal by 2020.

Best management practices would be required and implemented for activities associated with the proposed action. Construction would be accomplished in full compliance with current Virginia regulatory requirements, with compliant practices and/or products. There are no Leadership in Energy and Environmental Design (LEED) standards for museum facilities due to their unique energy and lighting requirements so the building will not be LEED certified. However, LEED elements will be incorporated into the design for energy savings throughout the lifecycle of the building.

By directly inventorying all emissions in a nonattainment region and monitoring concentrations of criteria pollutants in attainment regions, the Commonwealth of Virginia takes into account the effects of all past and present emissions in the state. This is done by putting a regulatory structure in place designed to prevent air quality deterioration for areas that are in attainment with the NAAQS and to reduce common or criteria pollutants emitted in nonattainment areas to levels that will achieve compliance with the NAAQS. This structure of rules and regulations applies either specifically or indirectly to all activities in the region and all activities associated with the proposed action alternative. MCBQ operates under a Title V Operating Permit. Annual reports demonstrating compliance are required under the permit will continue to be submitted. No

other large-scale projects or proposals have been identified that, when combined with the proposed action, would threaten the attainment status of the region, would have substantial GHG emissions, or would lead to a violation of any Federal, state, or local air regulation. In compliance with CEQ's and the EPA's guidance, a detailed qualitative and quantitative analysis of CO₂ equivalents is not required for the proposed action.

The proposed action would not significantly contribute to cumulative impacts to air quality, GHGs, or climate change.

4.6 Noise

Impact of Alternative A: There would be no new noise impacts with the no action alternative. Noise levels would remain the same.

Impact of Alternative B: Implementation of the proposed action would generate short-term, temporary noise from construction operations (i.e., noise from construction equipment, supply trucks, and worker vehicles). The potential for noise impacts from the proposed construction could be temporarily substantial in the immediate area. Construction equipment and placement of the foundation and support structures would constitute the most disruptive activities but are temporary in nature.

Noise from the operation of the expansion is negligible. Existing noise at and around the project area is largely attributed to Interstate 95 and U.S. Route 1 traffic, operations associated with military training, air facility operations, and facility visitors. The proposed action alternative would not have a permanent increase on noise levels. Noise generated from the use and operation of the building expansion would be similar to current levels.

4.7 Infrastructure, Utilities, and Transportation

Impact of Alternative A: The no construction alternative would not have an impact on existing infrastructure.

Impact of Alternative B: Construction of NMMC Phases I and III took the Phase II expansion into consideration. The existing utility transformer and emergency generator were designed and sized for the expansion. New electricity demands will be in place for the expansion but service connections are readily available. The existing museum building contains a 4000 amp switch board. The new area will require a 1200 amp switch board. A detailed evaluation of current electricity usage is being conducted.

Two new water connections will be required and two new fire hydrants will be placed at the rear of the building. A new grease interceptor will be added. The grease interceptor must be plumbed to sanitary sewer vice stormwater drainage system. Natural gas service may also be required for the new kitchen facilities.

It is expected that the museum expansion will add a considerable number of visitors and traffic into the MCHC complex. This traffic will mix with the normal projected growth along the U.S. Route 1 corridor. A TIA, included as Appendix C, was completed by Timmons Group in 2011. This study recommended a second entrance to the complex. The Heritage Parkway, currently under construction, will allow for a second ingress/egress location for the museum. Construction of turn lanes along the northbound and southbound lanes of U.S. Route 1 will also be completed to alleviate potential highway backups at the museum entrances. These projects were evaluated in a 2011 EA completed by MCBQ.

Due to the master planning process and past improvement projects at the MCHC, no major impacts to existing infrastructure will occur.

4.8 Hazardous Materials/Waste/Solid Waste

Impact of Alternative A: The proposed no action would have no effect on general procedures for hazardous materials and hazardous waste management at MCBQ.

Impact of Alternative B: Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets (MSDSs). Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operations; monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation), and biological (e.g., infectious waste) agents; recommend and evaluate controls (e.g., ventilation, respirators) for the protection of personnel; and ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

It is expected that hazardous materials such as paints, solvents, etc. will be utilized during construction. Hazardous materials can become hazardous waste when disposal occurs. Hazardous waste will be removed in accordance with all state and

federal regulations. The contractor may not dispose of hazardous materials/waste on MCBQ property.

All solid waste activities will be covered in the project solid waste management plan. This plan must be submitted to NREA for review prior to receipt of the Notice to Proceed. Submit a copy of the waste management plan to the Contracting Officer and/or designated representative, and to NREA (see Section 8.0 for the solid waste program contact information).

The contractor is responsible for coordinating all solid waste disposals at a landfill that meets all Federal, State, and local regulatory standards. Hazardous waste and universal waste will be disposed of in compliance with all applicable regulations. The contractor will support the solid waste diversion philosophy outlined in E.O. 13514 by recovering/recycling materials.

Alternative B will result in construction waste. Reports of waste generated (including recycling) including material type (Construction Demolition Debris, concrete, scrap metal, used oil, etc), tons, disposal destination, and disposal cost shall be reported via the Construction Waste Management Report (see Appendix F) to NREA within 30 days of the close of the project, and no later than October 15 of the calendar year to be included in annual report submissions.

4.9 Health/Safety

Impact of Alternative A: This alternative would maintain the status quo. Alternative A would not have an impact on health/safety.

Impact of Alternative B: Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by DoD regulations designed to comply with standards issued by the Occupational Safety and Health Administration (OSHA) and EPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors. Construction workers would not be exposed to greater safety risks from the inherent dangers at construction sites. Contractors would be required to establish and maintain safety. Therefore, the proposed construction would not introduce new or

unusual safety risks, assuming construction protocols are followed.

The new construction must be compliant with Unified Facilities Criteria (UFC) 4-010-01 in regards to antiterrorism/force protection (AT/FP) standards for buildings. Additionally, because the expansion area is greater than 50 percent of the existing area, the original museum facility must be retrofitted to meet UFC 4-010-01 unless a waiver is granted. AT/FP standards help protect the safety of structures and its occupants.

Operation of the NMMC expansion would not pose health and safety risks to the general public. Implementation of Alternative B would not have an adverse effect on health and safety.

4.10 Environmental Justice/Socioeconomics

Impact of Alternative A or B: Population data reveals that census tracts surrounding the project area have higher percentages of minorities, low-income families than Prince William and Stafford Counties as a whole. While the proposed project would occur near populations containing children, it will not significantly affect the health of these children. Temporary minor impacts such as noise created by construction activities would occur but these impacts will not disproportionately affect children. Best management practices such as dust management would also be employed to eliminate or keep temporary environmental nuisances to a minimum.

Implementing any of the proposed alternatives would not be expected to significantly impact the socioeconomics or create disproportionately high and adverse human health or environmental effects to minority, low-income, or children at MCBQ or in the surrounding area.

Implementation of Alternative B will likely result in a temporary closure of the NMMC for a few months to accommodate the new construction. Closure will result in a revenue loss for the museum. It is advised that closure occur around January or February as these are the months with the lowest visitation numbers. Closure will have an impact on revenue but will be temporary. Potential closure is being carefully coordinated with the MCHF and museum staff.

The expansion of the facility, as proposed in Alternative B, would result in new employment opportunities. This will result in a minor positive impact to the community. It is expected

that any new job vacancies would be filled via the surrounding community. New pressures on community infrastructure and school districts are not expected to occur.

4.11 Recreation

Impact of Alternative A: There would be no site work with this alternative and there would be no impact to recreation aboard MCBQ.

Impact of Alternative B: The site is located within a no hunting zone. No hunting, fishing, or hiking/biking/running paths exist within the MCHC complex. It is expected that NMMC will be closed to visitors for a few months to accommodate the new construction. It is advised that closure occur around January or February as these are the months with the lowest visitation numbers. Museum closure will affect public access to the MCHC but is necessary for safety and construction purposes. Closure of the museum facility will be relayed to the public well in advance.

4.12 Military Training

Impact of Alternative A: This alternative does not involve any construction and would not have any effects on military training.

Impact of Alternative B: The MCHC and NMMC are not used as a military training area. Alternative B will not cause impacts to military training.

4.13 Cumulative Impacts

For NEPA analysis, a cumulative impact is defined as the impact on the environment, which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future action. Impacts can result from individually minor but collectively significant actions taking place over a period of time.

The proposed action was evaluated for cumulative impacts relating to the following actions:

- Construction of the Heritage Center Parkway and scenic overlook. This project is currently under construction. An EA was completed for this project in 2011 resulting in a Finding of No Significant Impact. This project will have minor (under 0.1 acre) wetland impacts that will be properly permitted by the appropriate state and federal agencies having jurisdiction. It is expected that the project will qualify for a Nationwide Permit 3 for culvert maintenance.

- Phase I of the National Museum of the Marine Corps and Memorial Park was completed in 2006 and the Memorial Chapel was completed in 2009. An EIS was completed for this project.
- Actualization of erosion control measures along Little Creek. There are a variety of USACE proposed remediation projects to be completed as base funding allows. Cumulative impacts should be of a positive nature working within the watershed to correct erosion and sediment loads.
- Phases 2 and 3 of the Russell Road Widening from the Marine Federal Credit Union towards Dunlap Circle is under design and is expected to be complete in 2015. An EA was completed for Phase 2 in 2011. An EA was completed for Phase 3 in 2012. Mitigations for these phases include purchasing of mitigation banking credits for less than 0.1 acre of wetland impacts, purchasing of stream credits, a Phase III archaeological data recovery, and implementation of sediment and erosion controls.
- Widening of Fuller Road from the front gate to Mason Drive. An EA was completed for this project in 2012. Mitigation measures include a stabilization study by USACE and subsequent erosion control projects. Widening of Fuller Road beyond Mason Drive may occur in the future but any completion timeframes and impacts would be speculative. A Civil War camp site (Camp French) could be adversely impacted if the project limits extend to the southeastern portion of Fuller Road. Proposed projects within Little Creek will occur just upstream of the confluence at Purvis Road/Fuller Road.
- Realignment of Purvis Road. This project qualified for a categorical exclusion in 2010. This project was evaluated within the Purvis Road Improvement Report and the proposed action alternative is compatible.
- The construction of a Consolidated Elementary School. This project is currently under construction with an expected completion date of 2015.
- The construction of a Child Development Center along Purvis Road was completed in 2013.
- The redevelopment of the Lyman Park housing area was completed in 2005. Stream and wetland mitigation were required in the form of on-site mitigation. The mitigation site is located along Little Creek.

Projects by others:

- Widening of U.S. Route 1 by the Virginia Department of Transportation (VDOT) and Prince William County (PWC). NEPA documents will be completed by VDOT/PWC. Wetland and stream impacts are expected for this project. Any required mitigation measures will be completed by VDOT/PWC.

▪ Realignment of Fuller Heights Road by VDOT and PWC. The project qualified for a Federal Highway Administration Categorical Exclusion in 2010. Minor wetland impacts and adverse effects regarding potential erosion to Little Creek are expected. A Little Creek stabilization study has been completed by USACE. Recommended stabilization projects will be carried out by MCBQ as funding allows. There is no expected start of construction date for this project.

Alternative B is located approximately 800 feet southwest of Little Creek. The MCHC is located within the Little Creek watershed. Potential impacts to Little Creek have been evaluated in relationship to past, present, or foreseeable future projects. Little Creek has undergone severe erosion and flooding due to heavy storm events, development pressures (increased impervious surfaces), maintenance practices, and inadequate stormwater controls throughout the watershed. The implementation of Alternative B will be compliant with EISA Section 438 and the Navy's LID Policy which will result in no net increase of stormwater runoff from the site. It is not expected that significant impacts to adjacent wetlands will occur. Based on these points, the cumulative impacts to Little Creek will be negligible.

Noise concerns in the area could be a concern if MCBQ and/or Prince William County begin the Fuller Road and/or Fuller Heights Road improvement projects at the same time the MCHF executes Alternative B. It is recommended that the Public Works Branch, MCBQ facilitate project planning dates for these projects to avoid elevated construction noise levels. Similarly, if this group of projects occur at the same time, Best Management Practices to protect water quality during construction will be vital. MCBQ NREA will monitor stormwater controls, dust, and sediment movement in the area for compliance.

The proposed action alternative (Alternative B) will not have significant cumulative impacts when considered with past, present, and foreseeable future projects. Appropriate avoidance and mitigation measures will occur throughout project implementation to ensure potential impacts remain below significant levels.

4.14 Unavoidable Impacts

It is not expected that there will be unavoidable permanent impacts associated with the implementation of Alternative A or B. Alternative B will result in temporary impacts related to

noise as discussed in sections 3.6 and 4.6 of this EA. Section 4.15 outlines Best Management Practices/Mitigations that will ensure potential impacts remain below significant levels.

4.15 Mitigation/Further Actions Required by Project Proponent

4.15.1 Mitigation of Affects to Waters of the United States

Based on concept drawings, Alternative B is not expected to require fill within wetlands or streams. In the event site plans change and the wetland located north of the proposed access road is impacted, the contractor will submit a JPA to the VMRC. Mitigation credits, if required, will need to be purchased at an approved mitigation bank within the same hydrologic unit as the project site. The project area resides in the Lower Potomac (02070011) hydrologic unit. Mitigation will need to be funded by the project proponent and accounted for throughout budget planning. Palustrine forested (PFO) wetlands will be required to be mitigated at a 2:1 ratio and palustrine emergent (PEM) wetlands will need to be mitigated at a 1:1 ratio unless otherwise indicated by regulatory agencies.

4.15.2 Mitigation of Affects to Water Quality

The implementation of basic erosion and sediment control practices would be required during construction as specified in the Virginia Erosion and Sediment Control Handbook (VDCR 1992). The proper installation and maintenance of erosion and sediment controls would minimize the movement of disturbed soils off-site and into the Potomac River watershed. The project will require a VSMP permit issued through the Virginia Department of Environmental Quality. The project will require that erosion and sediment (E&S) control plan and a SWPPP be submitted to the NREA Water Program at least 70 days prior to the start of land disturbance. The project must adhere to the new VSMP regulations per 9VAC25-870 which go into effect 1 July 2014, EISA 438 and the Navy's LID Policy. The E&S control plan and SWPPP must be approved by NREA before the VSMP permit is issued by the Commonwealth of Virginia. The NREA *Erosion and Sediment Control, Stormwater Pollution Prevention and Low Impact Development (LID) on MCB Quantico* (2013) application and design guidance document should be followed to eliminate approval delays.

4.15.3 Cultural Resources

In the event potential human remains (e.g. bones, bone fragments) are discovered, work must be halted or diverted to other areas until appropriate measures are taken. Contract Project Managers must be informed that any human remains

encountered are protected by state and federal law. The following procedures must be followed:

- Halt work at the location leaving remains in place and any associated features and objects
- Notify Base Archaeologist/NEPA Section per Section 8.0 of this EA
- Redesign project to avoid remains, if possible
- Base Archaeologist/NEPA Section will contact SHPO, and if remains are Native American will contact tribe(s)
- Removal of remains requires a permit from the SHPO, including the participation of a skeletal biologist or physical anthropologist, and plans to make appropriate notifications to possible descendants/relatives and other measures in accordance with state law and Advisory Council on Historic Preservation guidelines

4.15.4 Minimization of Dust

The contractor must follow Best Management Practices outlined in Section 4.5 of this EA for dust reduction. The proposed project will occur adjacent to interstate and highway traffic and residential/community areas.

4.15.5 Follow Vegetation Species Guidance

The project proponent/contractor is responsible for adhering to the planting guidance included in the Base Exterior Architecture Plan. The list of acceptable plant species is included as Appendix E.

4.15.6 Waste Management Plan/Construction Waste Management Report

The contractor must submit a Construction Waste Management Plan to the NREA, Solid Waste Program Manager (See Section 8.0 of this EA) prior to starting construction. The contractor must submit the Construction Waste Management Report included in Appendix F by October 15 or within 30 days of the project close.

5.0 CONCLUSION

Table 1. Summary of Impacts Alternatives A and B

Resources		Alternative A (No Action)	Alternative B (Proposed Action)
Land Use			
	Geology	0	0
	Soils	0	1/N
	Topography	0	0
Water Resources			
	Surface Waters	0	0
	Wetlands	0	0
	Floodplains	0	0
	Groundwater	0	0
	Stormwater	0	0
Biological Resources			
	Vegetation	0	1/N
	Wildlife/Habitat	0	1/N
	T&E Species	0	0
Cultural Resources		0	0
Air Quality/Climate Change		0	1/N/T
Noise		0	1/N/T
Infrastructure			
	Utilities	0	0
	Transportation	0	0
Socioeconomics			
	Demographics	0	0
	Environmental Justice	0	0
	Employment/Income	0	1/P/T
Health/Safety/Munitions		0	0
Hazardous Materials/Waste and Solid Waste		0	1/N/T
Recreation		0	2/N/T
Military Training		0	0

3= High Impact, 2=Moderate Impact, 1=Low Impact, 0=Negligible/No Impact

P=Positive Impact, N=Negative Impact, T=Temporary (generally during construction)

Two alternatives regarding the expansion of the NMMC have been evaluated. Alternative A would have no adverse effect on the natural environment but would not allow for the actualization of the planned MCHC master plan. The potential adverse effects of

Alternative B to wetlands, streams, and overall water quality would be mitigated through measures mentioned in section 4.15.1 and 4.15.2 of this EA. With avoidance and mitigation measures, Alternative B would not have significant impacts on the natural or human environments and the preparation of an Environmental Impact Statement is not required.

6.0 DOCUMENT PREPARER

Christa Nye
NEPA Coordination Section
Natural Resources and Environmental Affairs Branch
Installation and Environment Division (GF)
Marine Corps Base Quantico, VA 22134
(703) 432-6770

7.0 LIST OF AGENCIES AND PERSONS CONTACTED

The following were contacted to review or during preparation of this Environmental Assessment:

Natural Resources and Environmental Affairs Branch, Facilities Division, Marine Corps Base Quantico, VA 22134

Amy Denn, Head
Major Peter Baker, Deputy
Robert Stamps, Head, Natural Resources Section
Frank Duncan, Head, Environmental Planning Section
Stacey Rosenquist, Head, Environmental Compliance Section
Heather McDuff, Head, NEPA Program
Ron Moyer, Head, Forestry Program
Donna Heric, Remediation Program Manager
Kate Roberts, Base Archaeologist
Andy McClelland, Air Program Manager
Jonmark Sullivan, Water Program Manager
Ronald King, Solid Waste Program Manager

Office of Counsel (C 050), Marine Corps Base Quantico, VA 22134

Nathan Stokes, Associate Counsel

8.0 CONTACT INFORMATION

Contact regarding this EA:
Christa Nye at Christa.Nye@usmc.mil, 703-432-6770

Contact regarding archaeological resources:

Kate Roberts at Catherine.Roberts@usmc.mil, 703-432-6781

Contact regarding stormwater, E&S control plan, SWPPP approvals:
Jonmark Sullivan at Jonmark.Sullivan@usmc.mil, 703-432-0528

Contact regarding air quality, ozone depleting substances:
Andy McClelland at Andrew.McClelland@usmc.mil, 703-432-0529

Contact regarding solid waste and reporting requirements:
Ron King at Ronald.King@usmc.mil, 703-432-0524

Contact regarding forestry:
Ron Moyer at Ronald.Moyer@usmc.mil, 703-432-6775

9.0 REFERENCES

Wetland Delineation, Wetland Delineation Report Marine Corps Heritage Foundation Hotel and Conference Center, Marine Corps Base Quantico, Prince William County, Virginia, Louis Berger Group, Inc. (LBG).

Intergovernmental Panel on Climate Change (IPCC). Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007).

Natural Resources and Environmental Affairs Branch (NREA) Integrated Cultural Resource Management Plan for Marine Corps Base, Quantico, Virginia (2007).

Natural Resources and Environmental Affairs Branch (NREA) Integrated Natural Resources Management Plan for Marine Corps Base, Quantico, Virginia (2001).

Phase I Archaeology Survey, Marine Corps Heritage Center, Marine Corps Base Quantico, Stafford County. Parsons Harland Bartholomew and Associates, Inc. Submitted to the Department of the Navy, J. Sanderson Stephens, Dennis Knepper, Madeleine Pappas and Sean Fizzel (1998).

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. Available online at <http://soils.usda.gov/technical/classification/osd/index.html>.

VA Chesapeake Bay Preservation Act, VA Code 10.1-2100 - 2115
Clean Air Act of 1970, as Amended 42 USC § 7401 *et seq*
Coastal Zone Management Act of 1972, as Amended 16 USC § 1451, *et seq*.

Erosion and Sediment Control Regulations (VR 625-02-00) Erosion and Sediment Control Law, Article 4, Chapter 5 of Title 10.1 of the Code of Virginia.

Executive Order 12989, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

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

Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance.

Erosion and Sediment Control, Storm Water Pollution Prevention and Low Impact Development (LID) on MCB Quantico Application and Design Guidance (2013).

National Historic Preservation Act, Public Law 89-665; 16 U.S.C. 470 *et seq.*

U.S. Migratory Bird Treaty Act, 16 USC 701-712.

U.S. Endangered Species Act, 16 USC 1531-1544.

U.S. Clean Water Act, 33 USC 1344.

Appendix A
Wetland Delineation (2011) and Jurisdictional Determination



REPORT TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NORFOLK DISTRICT CORPS OF ENGINEERS
FORT NORFOLK HILL FRONT STREET
NORFOLK VIRGINIA 23510-1096

June 21, 2011

Northern Virginia Regulatory Section
NAO-2011-01287 (Marine Corps Heritage Foundation Hotel and Conference Center)

United States Marine Corps
Marine Corps Base Quantico and
Naval Facilities Engineering Command Washington
Marine Corps Base Quantico
Quantico, Virginia

Gentlemen:

This letter is in regard to your request for a preliminary jurisdictional determination for waters of the U.S. (including wetlands), on property known as the Marine Corps Heritage Foundation Hotel and Conference Center, located on an approximately 28.1 acre parcel west of Jefferson Davis Highway (U.S. Route 1), south of Juplin Road (VA State Highway 619) and east of Interstate 95, in Prince William County, Virginia.

The map entitled "Marine Corps Heritage Foundation Hotel and Conference Center", by the Louis Berger Group, Inc. dated April 2011 (on file at the Corps) provides the location of waters and/or wetlands on the property listed above. The basis for this delineation includes application of the Corps' 1987 Wetland Delineation Manual and the positive indicators of wetland hydrology, hydric soils, and hydrophytic vegetation.

Discharges of dredged or fill material, including those associated with mechanized land clearing, into waters and/or wetlands on this site may require a Department of the Army permit and authorization by state and local authorities including a Virginia Water Protection Permit from the Virginia Department of Environmental Quality (DEQ), a permit from the Virginia Marine Resources Commission (VMRC) and/or a permit from your local wetlands board. This letter is a confirmation of the Corps preliminary jurisdiction for the waters and/or wetlands on the subject property and does not authorize any work in these areas. Please obtain all required permits before starting work in the delineated waters/wetland areas.

This is a preliminary jurisdictional determination and is therefore not a legally binding determination regarding whether Corps jurisdiction applies to the waters or wetlands in question. Accordingly, you may either consent to jurisdiction as set out in this preliminary jurisdictional determination and the attachments hereto if you agree with the determination, or you may request and obtain an approved jurisdictional determination. This preliminary jurisdictional determination and associated wetland delineation map may be submitted with a permit application."

Enclosed are two copies of the "Preliminary Jurisdictional Determination Form". Please review the document, sign both copies, return one copy to the Corps at the Northern Virginia Field Office at 18139

DOUBLE CLICK LETTER TO VIEW ENTIRE JD

Prepared for
United States Marine Corps
Marine Corps Base Quantico and
Naval Facilities Engineering Command, Washington

**Wetland Delineation Report
Marine Corps Heritage Foundation Hotel
and Conference Center**

**Marine Corps Base Quantico
Quantico, Virginia**



July 2011

FOR OFFICIAL USE ONLY

DOUBLE CLICK LETTER FOR ENTIRE DELINEATION REPORT

APPENDIX B
Small-whorled Pogonia Survey Memorandum



UNITED STATES MARINE CORPS
MARINE CORPS BASE
QUANTICO, VIRGINIA 22134-5001

IN REPLY REFER TO:
11015/1
B 0466
26 Jul 13

MEMORANDUM FOR THE RECORD

From: Head, Natural Resources Section, Natural Resources and
Environmental Affairs Branch
To: File
Subj: SMALL WHORLED POGONIA SURVEY FOR MARINE CORPS HERITAGE
CENTER EXPANSION
Encl: (1) Map of Survey Area

1. The project area for expansion of the Marine Corps Heritage Center (MCHC) is shown at the enclosure. It was surveyed for the presence of the small whorled pogonia (SWP), a federally listed threatened plant species. The SWP is the only federal or Virginia listed threatened or endangered species that would be expected to occur on this site. The survey was conducted on 12 July 2013 by Tim Stamps, John Rohm, Jeffrey Partee, Damon Lowery, and Matthew Dye.

2. Most of the survey area north of the existing museum had already been deforested and was not suitable habitat for SWP. The forestland south of the museum building did present mature deciduous forest that could potentially harbor SWP. A thorough search was conducted and no SWP were located.

3. Based on the results of the survey, the proposed expansion of the MCHC will have no impact on federal or Virginia listed threatened or endangered species.

R. T. STAMPS

Copy to:
Head, NEPA Section

Appendix C
Traffic Impact Analysis

National Museum of the Marine Corps Expansion

Prince William County, Virginia

Traffic Impact Analysis

May 16, 2011

Prepared For:

Marine Corps Heritage Foundation

TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS 

Contact: Jennifer D. De Vaughn, PE

1001 Courthouse Parkway, Suite 300 • Richmond, VA 23219
(804) 380-0500 phone • (804) 380-1430 fax
www.timmons.com

DOUBLE CLICK TIA COVERSHEET FOR ENTIRE REPORT

Appendix D
SHPO Concurrence Letters



COMMONWEALTH of VIRGINIA

Department of Historic Resources

2801 Kensington Avenue, Richmond, Virginia 23221

W. Taylor Murphy, Jr.
Secretary of Natural Resources

Kathleen S. Kilpatrick
Director

Tel: (804) 527-2223
Fax: (804) 385-2511
TDD: (804) 527-2549
www.dhr.state.va.us

June 18, 2003

Mr. Jeff Gardner
NEPA Coordination Section
Natural Resources & Environmental Affairs Branch, G-5
Marine Corps Base
3250 Callin Avenue
Quantico, VA 22134-5001

Re: Marine Corps Heritage Center
Stafford County, Virginia
DHR No. 1998-0842

Dear Mr. Gardner:

We have received a copy of the draft report entitled *Phase I Archaeological Survey, Marine Corps Heritage Center, Marine Corps Base, Quantico, Stafford County, Virginia*. The report was prepared by Parsons Harland Bartholomew & Associates, Inc. and the Parsons Engineering Science, Inc. (May 1999). We apologize for the delay in our response.

Survey of OCS and Thompson Housing North Areas:

Eight prehistoric sites and one site containing both prehistoric and historic components were identified during the survey of Areas A-F and G: 44PW1091-11PW1095 and 44S1374-44ST1379. No archaeological sites were located in Area E. We concur with the consultant's conclusion that none of these eight sites are considered eligible for NRHP nomination due to the lack of contextual integrity, disturbances, low artifact density and low information potential. No further work is needed in connection with these sites.

Survey of Locust Shade Park Area:

Area H includes the nearby Sisson Cemetery (Site H-1, 44PW1042). Areas I (44PW1093), J (44PW1045), K (44PW1048), M (44PW1047), N (44PW1046) and O (44PW1044) was surveyed along with Areas H (44PW1042), L and P. Areas L and P revealed no archaeological sites.

We have some concerns regarding the Sisson Cemetery (H-1, 44PW1042). According to the report on page 5-32, the size of the cemetery is given as approximately 300' x 170'. It is not clear to us whether these measurements came from the pedestrian survey or from the Maintenance Department map mentioned in the report. Please submit a copy of this Maintenance Department map, which would provide needed information about the shape and size of the Sisson Cemetery. Please also include information about the proposed buffer and draw this buffer around the Sisson Cemetery on the Maintenance Department map. This information should also be incorporated into the final report.

Administrative Services
16 Courthouse Avenue
Petersburg, VA 23203
Tel: (804) 585-1831
Fax: (804) 568-8186

Capital Region Office
2911 Kensington Ave.
Richmond, VA 23221
Tel: (804) 385-2331
Fax: (804) 385-2331

Pennsylvania Region Office
812 Cedar Street, 2nd Floor
Petersburg, VA 23204
Tel: (804) 395-6707
Fax: (804) 395-6712

Rainbow Region Office
1090 Pennington Ave., 5th Fl.
Roanoke, VA 24011
Tel: (540) 857-7585
Fax: (540) 857-7388

Winchester Region Office
307 N. Kent Street, Suite 201
Winchester, VA 23391
Tel: (640) 722-8427
Fax: (640) 722-7513

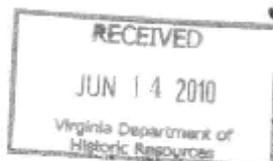
DOUBLE CLICK SHPO LETTER



UNITED STATES MARINE CORPS
MARINE CORPS BASE
QUANTICO, VIRGINIA 22134-6001

IN REPLY REFER TO:
5090/3.10002
B 046

JUN 09 2010



Ms. Kathleen S. Kilpatrick
State Historic Preservation Officer
Department of Historic Resources
2801 Kensington Ave
Richmond, VA 23221

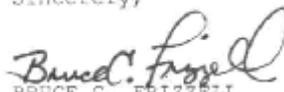
Dear Ms. Kilpatrick:

SUBJECT: CULTURAL RESOURCE SURVEYS FOR RANGE AND MUSEUM PROJECTS

Marine Corps Base Quantico (MCBQ) has proposed expansion of live-fire areas at five training ranges, and a pedestrian trail at the National Museum of the Marine Corps. MCBQ contracted The Louis Berger Group, Inc. (LBG) to conduct Phase I cultural resources surveys on the areas of potential effect for these projects and five other unaffected areas as Section 110 inventory.

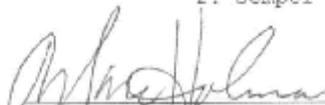
LBG identified two 19th century dwelling sites in the Range 14 area, 44PW1870 and 1871, that their enclosed report recommends as not eligible for the National Register of Historic Places (NRHP). While the survey identified no other sites in areas subject to affects, the report recommends 44PW1868 and 1869 as potentially NRHP eligible. Please countersign and return this letter if you concur with this Command's finding that the undertakings would have no effect on NRHP eligible properties. If you require any additional information concerning these projects, please contact Mr. John Haynes (703) 432-6781.

Sincerely,


BRUCE C. FRIZZELL
Head, Natural Resources and
Environmental Affairs Branch
By direction of the Commander

Enclosures: 1. Phase I Cultural Resource Investigations, Marine Corps Base Quantico, Prince William and Stafford Counties, Virginia (2 copies on pH neutral paper)

2. Semper Fidelis Park Pathway Area of Potential Effect

 2010-1186 13 July 10
VHDR Signature VHDR File No. Date
(CULTURAL RESOURCE SURVEYS FOR RANGE AND MUSEUM PROJECTS)

Appendix E
BEAP Plant Palette

TABLE 3-1
PLANT PALETTE

Current Plant
Plant palette
added 2007.

Botanical Name (Common Name)	Height Range	Distinguishing Characteristics				Special Uses					Decorations				
		Winter Form	Foliage	Bark	Fruit/Flowers	Foli Color	Winter Interest	Form/Color	Light Tolerant	Soil Tolerant	Shade Tolerant	Screen	Planting	Street/Planting Use	Large Openings
Large Deciduous Trees (over 50 feet)															
Acer rubrum "October Glory" (Red Maple)	40-60'														
Acer spicatum (Spiral Maple)	50-75'														
Betula nigra (River Birch)	40-70'														
Cornus phytoloma japonicum (Korsura Tree)	40-60'														
Quercus prinus (Pin Oak)	40-80'														
Quercus phellos (White Oak)	40-90'														
Quercus rubra maxima (Eastern Red Oak)	60-80'														
Taxodium distichum (Bald Cypress)	50-70'														
Thuja occidentalis "Green Scent" (Green Spine Linden)	60-70'														
Schinus molle (Villaga Green Zerkow)	50-80'														
Medium Deciduous Trees (30 to 40 feet)															
Corylus heterophylla "Fastigata" (Upright European Honeysuckle)	40-60'														
Fraxino japonica "Spiral Star" (Thornless Honeylocust)	30-70'														
Ulmus parvifolia (Chinese Elm)	40-60'														
Small Deciduous/Ornamental Trees (15 to 25 feet)															
Acer palmatum (Japanese Maple)	15-20'														
Cercis canadensis (Eastern Redbud)	20-30'														
Comus kousa (Kousa Dogwood)	20-30'														
Crataegus virginica (White Flargus)	12-20'														
Lacustris indica (Common Crapemyrtle)	15-25'														
Magnolia x soulangiana (Japanese Magnolia)	20-30'														
Magnolia stellata (Star Magnolia)	15-20'														
Paulownia fortunei "Thunderbolt" (Purple leaf Plum)	15-30'														

DOUBLE CLICK ABOVE TO SEE ENTIRE PLANT PALETTE

Appendix F
Construction Waste Management Report

Construction Waste Management Report
Quantico Marine Corps Base

Report Date: _____
Project Number: _____ Project Name: _____
Contract Number: _____ Contract Task Order/Delivery Order: _____

Reporting Period: _____ to _____

SUBMIT THIS FORM BY FAX TO (703) 784-4953, OR BY EMAIL TO: ronald.king@usmc.mil

Comments: _____

Waste Stream	Disposal (Tons)	Disposal Cost	Recycled (Tons)	Recycled Cost	Recycled Revenues
C&D		\$		\$	\$

CONSTRUCTION & DEMOLITION DEBRIS (C&D).

- Record hazardous and non-hazardous C&D waste as one entry. Enter total tons of C&D disposed of in a landfill, by incineration, and/or by hazardous waste contract.
- Enter total disposal cost for C&D.
- Enter the recycled hazardous and non-hazardous C&D tons as one entry under the recycling column. You can also claim C&D diversion conducted by a construction contractor or MILCON project. If you have recycled C&D, it is likely that some was disposed of as well. Therefore, if there are recycled tons of C&D there should be some disposed tons of C&D.
- Enter the cost associated with recycling. Recycling costs include handling, processing, transportation, and other costs associated with recycling C&D. Soils that are used at another location or that are reclaimed count toward recycling.
- Enter Recycling Revenues. Enter only actual revenues received from recycling. Do not enter cost avoidance for recycling revenues.

Reported by:

Company: _____ Contact: _____

Address: _____ Title: _____

E-mail address: _____

Telephone: _____ Fax: _____

Definitions:

Construction and Demolition (C&D) Debris. Waste derived from the construction, renovation, demolition or deconstruction of residential and commercial buildings and their infrastructure. C&D waste typically includes concrete, wood, metals, gypsum wallboard, asphalt, and roofing material.

Other Select Waste (OSW). Construction and demolition debris are the "Other Select Waste" categories for purposes of DoD metric reporting via SW module. If the Other Select Wastes are hazardous they must also be reported in the calendar year HW module.

ENVIRONMENTAL ASSESSMENT
FOR
FEDERAL BUREAU OF INVESTIGATION FACILITY IMPROVEMENTS
AT
MARINE CORPS BASE QUANTICO,
Stafford County, Virginia

National Environmental Policy Act (NEPA) Coordination Program
Natural Resources and Environmental Affairs Branch
Installation and Environment Division
Marine Corps Base Quantico, Virginia

July 2014

Proposed Agency Action: Facility Improvements at the Federal
Bureau of Investigation (FBI) Complex

Type of Statement: Environmental Assessment

Lead Agency: FBI

For further information on this NEPA document:

Natural Resources and Environmental Affairs Branch (B046)

Attn: Christa Nye

3250 Catlin Avenue

Marine Corps Base

Quantico, VA 22134

christa.nye@usmc.mil

(703) 432-6770

Lead Agency Contact:

Jeffrey Critzer

Architect, Facilities and Logistics Services Division (FLSD)

Unit Chief

Quantico Planning, Design & Construction Unit

(703) 632-1704

Document Date: July 2014

Abstract: This Environmental Assessment is intended to meet NEPA requirements for various facility improvements within the FBI Academy Complex, Quantico, Virginia.

The proposed action alternative would not have significant impacts on the natural or human environment. The preparation of an Environmental Impact Statement (EIS) is not required.

Alternative B is the action proponent's preferred alternative.

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Appendix A: Construction Waste Management Report

Appendix B: Naval Ordnance Safety and Security Activity (NOSSA)
Instruction 8020.15D

1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

This Environmental Assessment (EA) was prepared to comply with the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality (CEQ) regulations 40 C.F.R. §§ 1500-1508 for implementing NEPA. Fire, life safety, and building modernization upgrades are needed within the Federal Bureau of Investigation (FBI) complex, Marine Corps Base Quantico (MCBQ). The FBI operates its facility at MCBQ under various intergovernmental agency agreements, and this NEPA document is being executed as part of the Interservice Support Agreement between the FBI and MCBQ. Since the Department of the Navy (DoN) owns all of the land underlying the FBI Quantico complex, this document was completed to satisfy the NEPA requirements of the FBI as well as MCBQ.

1.1 Background

The FBI complex is situated in a campus-style arrangement and interconnected by glass enclosed walkways. Buildings 1-6 and 11 are parts of the original FBI complex buildings constructed in 1972. Individual building infrastructures are past their useful life expectancies and are non-compliant with current building, fire and life safety codes and are in general disrepair. Buildings 12, 13, and 16 were constructed after 1972 but are in need of modernization to meet current building codes. Table 1 details building information. Figure 1 depicts building locations.

Table 1. FBI Complex Building Information

FBI Building Number	MCBQ Building Number	Building Description	Date Built
1	27931	Training Administration	1972
2	27932	Hall of Honor	1972
3	27933	Library	1972
4	27934	Auditorium	1972
5	27935	Classroom	1972
6	27936	Gym/Pool	1972
11	27941	Electrical Switchgear	1972
12	27942	Forensic Research/Training	1980
13	27935A	Office/Women's Lockers	1987
16	27947	Dormitory	1990

Figure 1. FBI Complex



2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative A - No Action

Under alternative A, building upgrades and modernization would not occur. This is not the preferred alternative as important fire and life safety building codes would not be met.

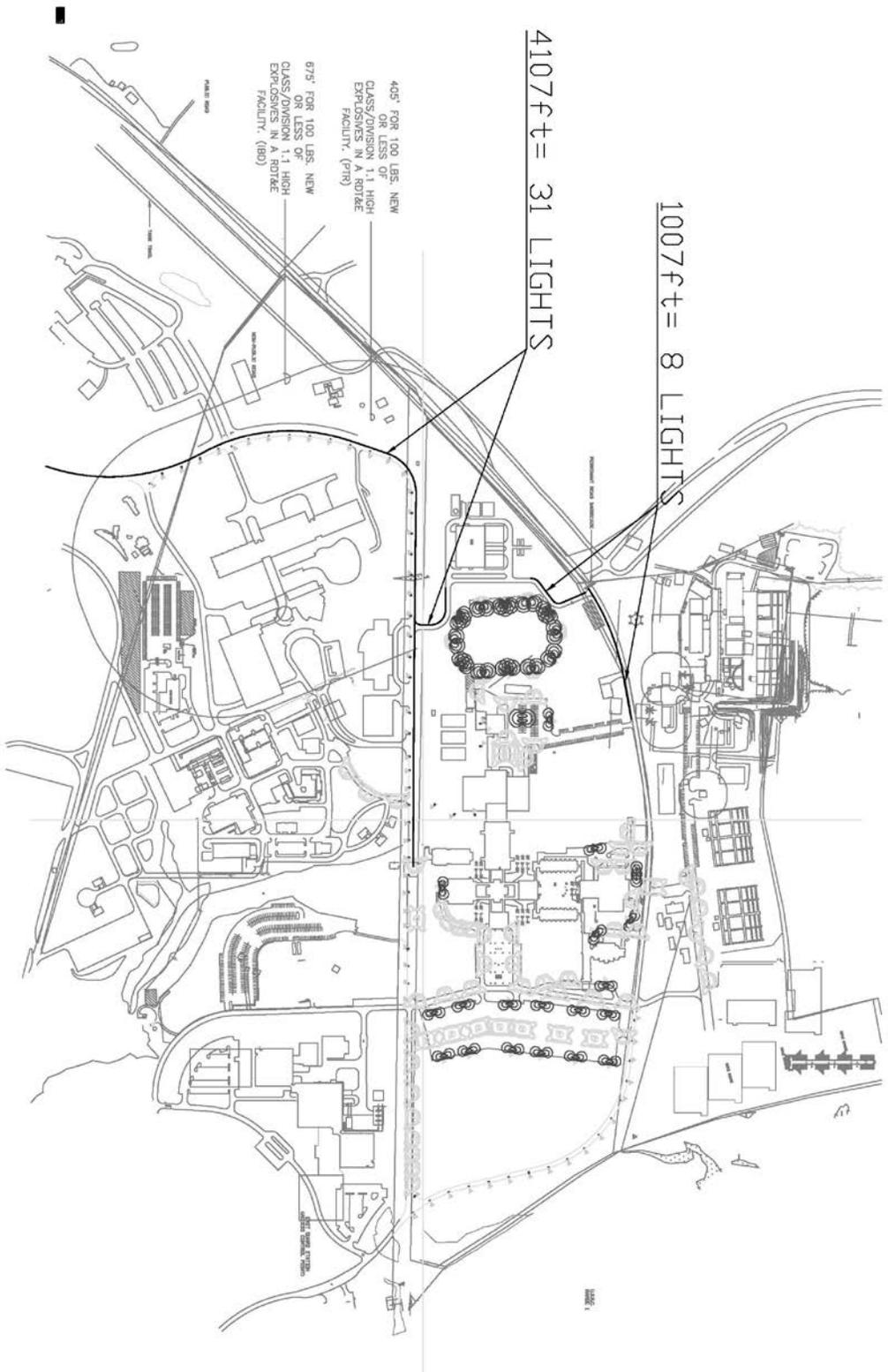
2.2 Alternative B - Actualize facility repairs, upgrades, and modernization

Alternative B would allow for building repairs, upgrades, and modernization as detailed in Table 2.

Table 2. Proposed Alternative B Building/Facility Improvements

Building Number/Location	Improvement
1	Replace glass walls and doors separating walkways, install fire sprinklers, enclose north stairs, upgrade fire walls and doors to meet fire codes
2	Replace doors to meet fire rating, install fire sprinklers
3	Exterior stair renovations, replace four Air Handler Units (AHUs)
4	PCB and asbestos abatement, replacement of five AHUs, install new AHUs, fire sprinklers, emergency notification system, egress upgrades, new seating, flooring, ceiling repairs, add ingress/egress ramp, remove/replace four exterior stairs, add sidewalks, mechanical/electrical/plumbing upgrades
5	Fire alarm, sprinkler install
6	Fire alarm, sprinkler install, AHU replacement, PCB abatement
11	Masonry repair
12	Masonry repair
13	Remove and replace 1 st floor AHU and repair
16	Masonry repair
Hoover Road, Central Utility Plant area, Bureau Parkway (See Figure 2 for locations)	Install LED lighting

Figure 2. Lighting Improvements



Alternative B is the preferred alternative to ensure compliance with fire and life safety codes and to ensure buildings are comfortable for occupants.

2.3 Alternatives Dropped from Further Review

In accordance with CEQ guidance, all reasonable alternatives must be rigorously examined within NEPA documentation. Marine Corps Order P5090.2A, Chapter 12, section 12103.1d (2) states that the NEPA process should identify and assess all reasonable alternatives to proposed actions that would avoid or minimize adverse environmental effects. Additionally, the reasons for eliminating alternatives must also be discussed in Environmental Assessments.

Due to the nature of the building improvements, no viable alternatives were identified. These repairs and upgrades are a result of a complex-wide facility evaluation and will ensure compliance with fire and safety codes. The proposed projects would be implemented in phases and it is likely construction would occur within only one building at a given time to minimize impacts to the FBI Academy.

3.0 EXISTING ENVIRONMENTAL CONDITIONS

CEQ regulations for implementing NEPA (40 C.F.R. Part 1500) require documentation that succinctly describes the environment of the areas potentially affected by the alternatives being considered.

All the alternatives under consideration for this proposal are located within the FBI complex in Stafford County, Virginia. The existing environmental conditions described in this section will be the same for all alternatives and for the excluded alternative.

3.1 Land Use

MCBQ is divided into two areas; Mainside, 6,000 acres east of Interstate 95 and U.S. Route 1 and; the Westside or Guadalcanal area, 53,200 acres west of the same highways.

The FBI complex is located between Lunga Reservoir and the Weapons Training Battalion area within the Westside of the base.

3.1.1 Geology

The proposed action would occur within the Westside of the Base, which lies in the Piedmont geologic region. The region consists of eroded former mountains with bedrock buried under approximately two to twenty meters of saprolite. The bedrock consists of a variety of igneous and metamorphic rocks.

3.1.2 Soils

The soils found in the Piedmont are the result of the soil formation on the underlying sediments. Many soils within the project area are disturbed due to past construction and road development.

Hydric soils and highly erodible soils can create development constraints or indicate potential environmental impacts. Hydric soils are defined as soils that are saturated long enough during the growing season to develop oxygen deficient conditions in their upper portions and are typically associated with wetlands, streams, or open water. Oxygen-deficient conditions within soils are conducive to the establishment of wetland vegetation. Hydric soils often contain large amounts of organic material and are not suitable for use in construction.

Highly erodible soils are classified as having an erosion rating index of eight or greater. Often, highly erodible soils are found on steep slopes and are not suitable for use in construction projects.

The majority of the proposed facility improvements will occur within two soil units: Cut and fill land (Cw) and State fine sandy loam, local alluvium (Sn). Additional soil units located within the proposed LED lighting area are: Appling fine sandy loam with 6 to 15 percent slopes (AIC2), Cartecay fine sandy loam (Ce), Cecil fine sandy loam with 2 to 6 percent slopes (CfB2), Cecil fine sandy loam with 5 to 15 percent slopes (CfC2), and Fairfax loam with 2 to 6 percent slopes.

The project area proposed for building improvements contains no problematic soils. The area slated for lighting improvements contains two highly erodible soil units and one mostly hydric soil. These potentially problematic soils cover approximately thirty percent of the project site and include:

-Appling fine sandy loam with 6 to 15 percent slopes (AIC2) is a deep, well-drained, gently sloping to strongly sloping soil located on narrow ridges and side slopes. Runoff is medium to rapid on this soil. Further erosion is a severe hazard if this soil is exposed.

-Cecil fine sandy loams (CfB2 and CfC2) are deep and well drained soils. CfB2 has a moderate erosion potential and CfC2 has severe erosion potential. Runoff on these soils is moderate to rapid.

Figure 3. Soils Map



-Catecay fine sandy loam (Ce) is a deep, moderately well drained to somewhat poorly drained soil. This soil has a seasonal water table at a depth of 12 to 18 inches. It is frequently flooded.

A geotechnical survey should be conducted regarding soils and suitability of planned construction activities. Undercutting and backfilling of soils may be required.

The soils map is included as Figure 3.

3.1.3 Topography

The terrain of the proposed project area consists of nearly level to steep slopes. Elevation within the FBI complex generally decreases from Bureau Parkway to Hoover Road. Elevation ranges from 310 to 340 feet above sea level (see Figure 4). Site drainage flows north to south.

3.2 Water Resources

Due to the rugged Piedmont topography and proximity to various water bodies, activities conducted in the project area could potentially affect the water resources of the area.

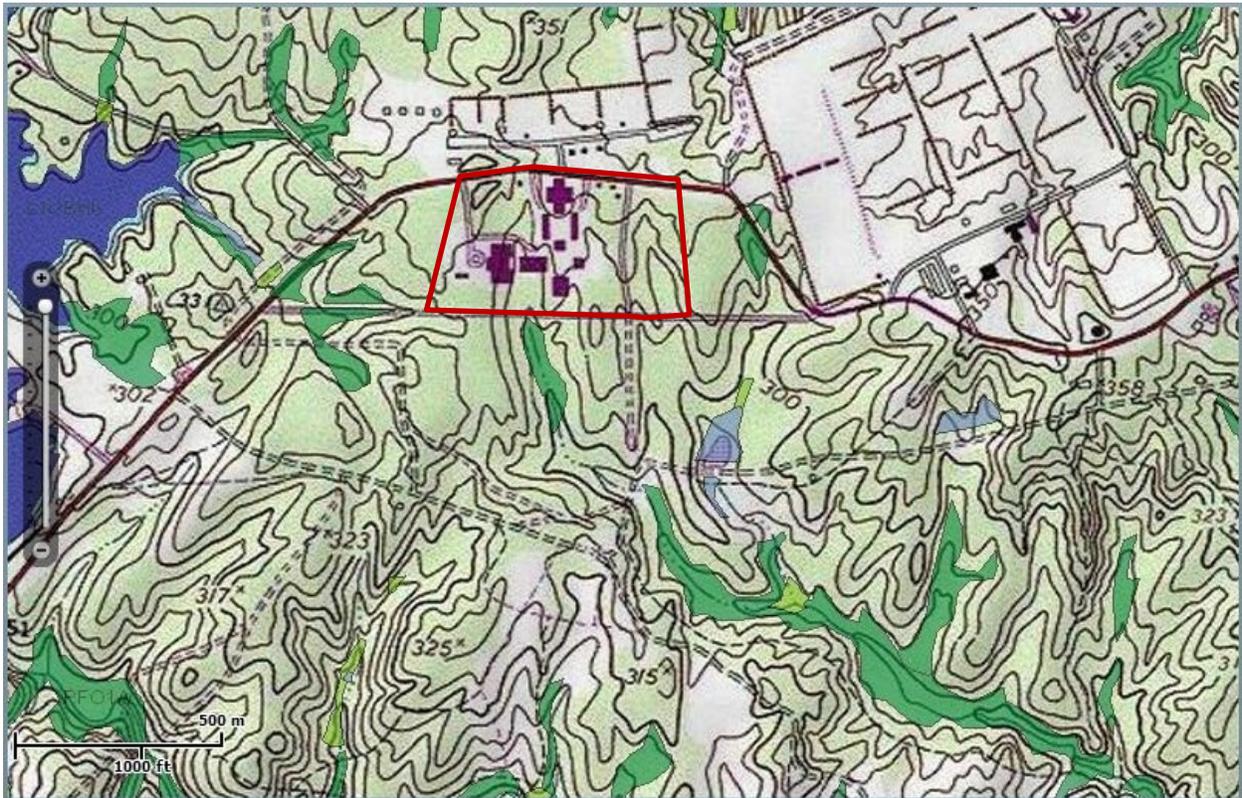
Activities in surface waters (including streams) and wetlands are regulated under numerous federal laws, regulations, and policies. The proposed actions would be bound by the following:

- Section 404 of the Clean Water Act (CWA) (33 U.S.C. § 1344), which requires a permit from the U.S. Army Corps of Engineers (USACE) for the discharge of dredged or fill material in to "waters of the U.S." a term that includes most streams, wetlands, and ponds.
- Executive Order (E.O.) 11990, *Protection of Wetlands*, requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

The Commonwealth of Virginia also regulates streams and wetlands that are considered "Waters of the State" through a number of laws and provisions. Any action that requires a federal Section 404 permit may also require a Section 401 water quality certification from the Virginia Department of Environmental Quality (DEQ), and under certain circumstances, the Virginia Marine Resources Commission (VMRC).

In 1988 Virginia enacted the Chesapeake Bay Preservation Act (CBPA) (Code of Virginia § 10.1, Chapter 21). This Act established a cooperative program between state and local

Figure 4. Topographic Map with Streams and Wetlands



governments to improve water quality in the Bay by requiring resource management practices in the use and development of environmentally sensitive land features. As defined by the CBPA, Resource Protection Areas (RPA) are buffer zones that include all areas within 100 feet of a tidal wetland, contiguous non-tidal wetlands, or perennial streams. Other areas are designated as Resource Management Areas (RMA). The RMA includes the 100-year floodplain, highly erodible soils, highly permeable soils, and non-tidal wetlands that are not part of an RPA. The Department of Defense (DoD) is a signatory to an agreement supporting the CBPA and its associated regulations and will comply to the maximum extent possible consistent with the military mission and budget constraints.

3.2.1 Streams

No streams exist within the proposed project areas. The nearest stream is located approximately 350 feet south of Building 12 and is a tributary to Justice Run. Streams are depicted in Figure 4.

3.2.2 Wetlands

There are no wetlands within the proposed project area. All areas are heavily disturbed and developed. The nearest wetland is associated with the tributary to Justice Run. Historic wetlands exist along Hoover Road but were impacted during construction of the FBI Laboratory. See Figure 4 for wetland locations.

3.2.3 Floodplains

E.O. 11988, *Floodplain Management*, requires federal agencies to eliminate/minimize occupancy and modification of floodplains. The order specifically prohibits federal agencies from funding construction in the 100-year floodplain, unless no practicable alternative exists. Development within the 500-year floodplain is also discouraged.

The location of Alternative B was identified on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) numbers 5101540040E panel 40 of 280. The site is described as being completely within Flood Zone X (unshaded) which is outside of the 500-year floodplain. The FEMA FIRM is included as Figure 5.

3.2.4 Groundwater

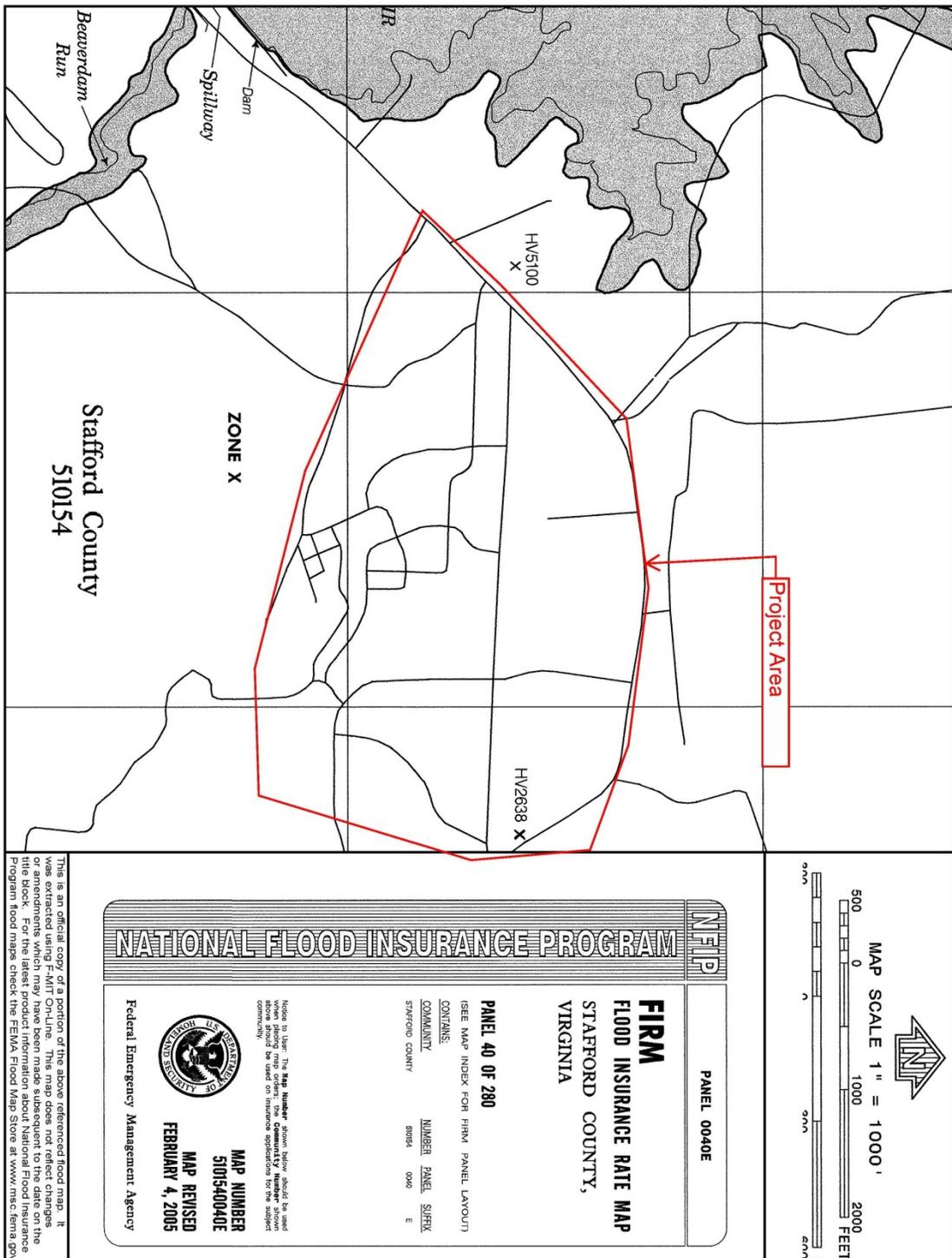
A band along the western edge of the Coastal Plain is the groundwater recharge area for underground aquifers that extend eastward under the Chesapeake Bay. MCBQ lies within one of those aquifers, the Potomac Aquifer. In this aquifer water can be reached at depths between 200 and 350 feet. One of the largest surface recharge areas for the Potomac Aquifer exists in Stafford County, near Interstate 95 (west of the project site). No comprehensive studies of groundwater resources have been conducted at MCBQ to date.

3.2.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. § 1451, et seq., as amended) provides guidance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. The CZMA states that "the boundary of a State's coastal zone must exclude lands owned, leased, held in trust or whose use is otherwise by law subject solely to the discretion of the Federal Government, its officers, or agents" (16 U.S.C. § 1453 [1]). Accordingly, MCBQ itself is statutorily excluded from Virginia's coastal zone.

Nevertheless, Section 307 of the CZMA mandates that federal projects that affect land uses, water uses, or other coastal

Figure 5. FEMA FIRM



resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally-approved coastal management plan. Therefore, if a proposed federal project or activity at MCBQ affects state coastal resources or uses beyond its boundaries Section 307 of the CZMA applies.

The Commonwealth of Virginia has developed and implemented a federally-approved Coastal Zone Management Program (VCP) describing current coastal legislation and enforceable policies. The Virginia VCP has nine enforceable policies which include: wetlands management, fisheries management, subaqueous lands management, dune management, non-point source pollution control, point source pollution control, shoreline sanitation, air pollution control, and coastal lands management.

3.2.6 Stormwater

The proposed project areas are located upslope from significant water resources including Justice Run and their associated tributaries and wetlands. Stormwater within the proposed project area discharges to the unnamed tributary to Justice Run via a piped stormwater discharge system. During heavy storm events, it is possible that stormwater sheet flows to both the unnamed tributary to Justice Run and to Lunga Reservoir which is located west of the FBI complex.

3.3 Biological Resources

3.3.1 Vegetation

The proposed project area mainly consists of maintained grass and shrubs. Deciduous forested areas are located west of buildings 11 and 12 and south of building 16. Forested areas consist of white oak (*Quercus alba*), red oak (*Quercus rubra*), red maple (*Acer rubrum*) in the overstory layer and Virginia creeper (*Parthenocissus quinquifolia*), Japanese honeysuckle (*Lonicera japonica*) and greenbrier (*Smilax spp.*) in the understory.

3.3.2 Wildlife and Wildlife Habitat

The FBI complex and the westside of MCBQ supports a wide variety of both game and non-game species with its diverse wildlife habitat. Game species include white-tailed deer, wild turkey, gray squirrel, eastern cottontail rabbit and bobwhite quail. Non-game species include resident and migratory songbirds, raptors, and various reptiles, amphibians, and invertebrates.

Migratory birds utilize a variety of habitats available throughout MCBQ including forestland, grassland, wetland, and riparian corridors. Habitat used by migratory birds is located at the FBI complex; the FBI complex is located within the 553 acre Forest Compartment 66 and also contains some maintained shrubs and grass.

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. § 703 et seq.) protects all species covered by the four migratory bird treaties the United States signed with Canada, Mexico, Japan, and Russia. The MBTA prohibits taking, killing, or possessing of migratory birds (including parts, feathers, nests, and eggs) unless permitted by the Secretary of the Interior. The United States Fish and Wildlife Services (USFWS) currently recognize 832 species of migratory birds covered by the MBTA.

Per E.O. 13186, *Responsibilities of Federal Agencies to Migratory Birds*, the DoD and USFWS established a Memorandum of Understanding (MOU) to promote the conservation of migratory birds. The MOU pertains to installation support functions such as the construction and operation of administrative/support facilities, commissaries, military exchanges, shops, road construction, and welfare/recreation activities.

Neotropical migratory birds breed in North America and migrate to Central and South America to overwinter. The wood thrush (*Hylocichla mustelina*), scarlet tanager (*Piranga olivacea*), and red-eyed vireo (*Vireo olivaceus*) are common neotropical migrants found in mature MCBQ forests. Much research is ongoing nationwide to determine the factors affecting the population densities and breeding success of these species. Bald Eagles, which are protected under the MBTA, are discussed within the threatened and endangered species/species of concern portion (3.3.3) of this EA.

3.3.3 Threatened and Endangered Species/Species of Concern

The Endangered Species Act (16 U.S.C. § 1531 et seq.) requires federal agencies to ensure that their actions will not jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of its critical habitat.

Three plant species on MCBQ are listed as federally threatened or endangered, including harperella (*Ptilimnium nodosum*), small whorled pogonia (*Isotria medeoloides*), and sensitive joint-vetch (*Aeschynomene virginica*).

Harperella is a federally-listed endangered plant species native to riverine habitats. This plant is only found in 13 areas ranging from Maryland to Georgia. Harperella has been historically found along Aquia Creek, which is located along the southern boundary of the installation.

The small whorled pogonia (SWP) is a federally-listed threatened species. The SWP is a perennial plant that generally occurs on gentle to moderate slopes with eastern or northern exposures and prefers acidic sandy loam soils with low nutrient content. There are approximately 15 known MCBQ colonies of SWP. During early planning phases, it was determined that the proposed project site could not be eliminated as potential SWP habitat.

Sensitive joint-vetch is a federally-listed threatened species. This plant is an annual legume that prefers slightly brackish tidal river systems and exists along the Potomac River.

One animal species, the dwarf wedge mussel (*Alasmidonta heterodon*) is federally-endangered. This small bivalve lives in freshwater streams and requires highly oxygenated and silt-free waters. This species has historically been found within the Aquia Creek watershed. An updated species survey is being conducted during the summer of 2014.

The Bald Eagle, *Haliaeetus leucocephalus*, was removed from the Federal List of Endangered and Threatened Wildlife and Plants in 2007 due to population recovery. The Bald Eagle is still afforded federal protection under the MBTA (see Section 3.3.2) and the Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. § 668 et seq.), and is considered a species of concern under the ESA. The BGEPA requires a buffer of 660 feet around an eagle nesting site. A Bald Eagle nesting site has historically been observed at Lunga Reservoir approximately 1,500 feet west of the proposed project site.

According to Chief of Naval Operations Instruction (OPNAVINST) 5090.1B, it is Navy and Marine Corps policy to cooperate with states to protect state-listed species, if mission compatible. Hence, MCBQ also considers project impacts to Virginia-listed rare species and state listed species during the NEPA process.

The Virginia Piedmont waterboatman, *Sigara depressa*, and the brook floater, *Alasmidonta varicose*, are two listed state endangered faunal species. Both species are water dependent. The Virginia Piedmont waterboatman is an insect that inhabits ponds and extremely slow moving streams. The brook floater is a

bivalve that is found in clean consistently moving streams in gravel or sand substrates.

3.4 Cultural Resources

Implementation of proposed federal actions must comply with the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. § 470 et seq., as amended). Under the NHPA, consideration of historic preservation issues must be integrated into the early stages of project planning by federal agencies. Under Section 106 of the NHPA, a federal agency is required to account for the effects of proposed actions on any district, site, building, structure, or object that is included or eligible for inclusion in the National Register of Historic Places (NRHP), prior to the expenditure of funds on the action. Section 110 of the NHPA requires the identification and evaluation of any cultural resources on federal property that meet the eligibility criteria of the NRHP.

The project areas are covered by previous Phase I and Phase II archaeological surveys as listed in Section 9.0 of this EA. No archaeological sites have been identified within the project vicinity previously. The proposed project will also not occur within a designated NRHP historic district and does not involve buildings over 50 years old.

3.5 Air Quality

The U.S. Environmental Protection Agency (EPA) defines ambient air (40 CFR Part 50) as "that portion of the atmosphere, external to buildings, to which the general public has access." In compliance with the 1970 Clean Air Act (CAA) (42 U.S.C. § 7401 et seq., as amended), the EPA has produced national ambient air quality standards (NAAQA) and regulations for six criteria pollutants: carbon monoxide, sulfur dioxide (SO₂), particulate matter (PM) at two levels-particles with a diameter less than or equal to a nominal 10 micrometers (PM₁₀) and less than or equal to a nominal 2.5 micrometers (PM_{2.5}), ozone, nitrogen dioxide (NO_x), and lead.

Areas that do not meet NAAQS are called non-attainment areas. MCBQ is located in a moderate ozone non-attainment area within the Ozone Transport Region, and in a PM_{2.5} non-attainment area. The General Conformity Rule (CAA Section 176(c) (4)) ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state's plans to meet the NAAQS.

The General Conformity Rule plays an important role in helping states improve air quality in those areas that do not meet the NAAQS. Under the General Conformity Rule, federal agencies must work with State, Tribal, and local governments in a nonattainment or maintenance area to ensure that federal actions conform to the air quality plans established in the applicable State Implementation Plan (SIP).

In order to target federal projects which have the greatest impact on regional air quality, EPA established *de minimis* thresholds under the General Conformity Rule. *De minimis* thresholds are pollutant-specific and specify the maximum allowable emissions from a project before a formal conformity determination must be prepared. Federal agencies do not need to prepare conformity determinations for actions that do not exceed these *de minimis* thresholds.

Additionally, several types of federal actions are automatically exempt from the General Conformity Rule without regard to their emissions. Actions such as routine repair of facilities and roads, routine transport of materiel and personnel, routine movement of mobile assets, and others are listed as exempt in 40 CFR 93.153(c)(2). Any equipment that requires a permit to construct and operate under a state's New Source Review program is exempt from General Conformity, as well as any other action specifically accounted for in the SIP.

A federal agency must perform a General Conformity applicability analysis prior to initiating any non-exempt action that will cause emissions of criteria pollutants for which the area is designated nonattainment or maintenance. The analysis must include reasonable estimates of direct emissions (caused by the action; occur at the same time and place) and indirect emissions (caused by the action; may occur later in time or in a different location than the action). The analysis must be performed for each year of the action and one year of typical operations. If the analysis indicates that the emission levels are below *de minimis* thresholds for all years, then no further action is necessary.

The pollutant *de minimis* criteria for the General Conformity Rule are 50 tons per year (tpy) for volatile organic compounds (VOC), 100 tpy for NO_x, 100 tpy for PM_{2.5}, and 100,000 tpy for CO₂.

3.5.1 Climate Change

Greenhouse gases (GHG) are atmospheric compounds that contribute to the greenhouse effect. GHGs include CO₂, CH₄, and N₂O, and fluorinated gases. The greenhouse effect is a natural phenomenon that causes heat to be trapped within the lowest portion of the earth's atmosphere creating a wide range of environmental concerns referred to as climate change. Climate change is associated with rising global temperatures, sea level rise, changing weather patterns, changes to local and regional ecosystems, including the potential loss of species, longer growing seasons, and shifts in plant and animal ranges. Most GHGs occur naturally within the atmosphere, but scientific evidence indicates a trend of increasing global temperature over the past century due to a combination of natural occurrences and an increase in GHG emissions from human activities (International Panel on Climate Change 2007).

According to the Quadrennial Defense Review Report of February 2010, the DoD has recognized that climate change will affect the DoD operating environment, roles, and missions undertaken; furthermore, adjustments due to climate change impacts on facilities and military capabilities will be necessary. The DoD has made a commitment to foster efforts to assess, adapt to, and mitigate the impacts of climate change. Specifically, the DoD has leveraged the Strategic Environmental Research and Development Program, a joint effort among the DoD, the Department of Energy, and the EPA, to develop climate change assessment tools.

CEQ's NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions states that "if a proposed action would be reasonably anticipated to cause direct emissions of 27,563 tpy (25,000 metric tons) or more of CO₂-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public." These recommendations are consistent with the EPA's Mandatory Reporting of Greenhouse Gases (Mandatory Reporting) rule (40 CFR Part 98), which applies to all stationary sources emitting 27,563 tpy or more of CO₂-equivalent GHG emissions. The Mandatory Reporting rule allows for data collection to help shape future climate change policies and programs, but does not require control of GHGs. MCBQ adheres to CEQ's guidance on evaluating a project's impact on climate change and GHG emissions during the NEPA process.

3.6 Noise

Noise, defined as unwanted sound, is a prevalent human environment concern in and around military installations. The major sources of noise at the FBI Complex and MCBQ include law enforcement training, aircraft, artillery, small arms, explosives, vehicles, heavy equipment, and machinery.

Existing noise levels around the FBI Complex are primarily from air operations at the nearby Marine Corps Air Facility (Turner Field) and ranges located west of I-95. Ordnance used in live and simulated fire exercises is generally conducted at ranges on the western side of the base, approximately four miles from the proposed project area. Noise from normal vehicle operation is common in the project vicinity. Temporary noise from construction activities is also present.

3.7 Infrastructure, Utilities, and Transportation

The site has a well-developed infrastructure; utilities and services are readily available.

3.7.1 Utilities

Utilities such as water, electrical, natural gas, and fiber optic communication cable are readily available within the FBI Complex. Water is supplied by Smith Lake via the Stafford County water authority, sanitary service (sewer) is provided by Stafford County sanitation district, electricity is provided by Dominion Power, natural gas is provided by Columbia Gas Company, Inc. and communications are provided by both Verizon, Inc. and Federal Government networks. No underground storage tanks for fuel are located in the immediate project areas.

3.7.2 Transportation

Access to the FBI Complex is accomplished via MCBQ entry control points at either the Camp Barrett or the Ponderosa gates and then through the controlled FBI Complex gates.

3.8 Munitions Response Site

Alternative B is situated within a known Munitions Response Site (UXO Site 033). See Figure 6 for unexploded ordnance (UXO) site location map. UXO Site 33 encompasses 401 acres and was part of a range system utilized from approximately 1943 to the mid-1950s. Past range activities include the use of recoilless rifle ammunition, mortars, artillery, rifle grenades, rockets, and shoulder-fired weapons.

The Munitions Response Program (MRP) was initiated in 2001 after Congress directed the DoD to identify and prioritize its

munitions response sites as part of the Defense Environmental Restoration Program. The MRP is designated to clean up discarded military munitions, UXO, and their chemical residues at closed ranges and munitions disposal sites.

3.9 Hazardous Materials/Waste and Solid Waste

Old flooring, including vinyl composition tile (VCT), will be removed within building 4. Due to the age of the building, it is suspected that the VCT contains asbestos.

The AHUs within buildings 4 and 6 contain Polychlorinated Biphenyls (PCBs).

Hazardous materials such as paints, solvents, etc. are in use at the existing FBI facilities. All materials are utilized per applicable state and federal regulations.

Solid waste produced within the FBI complex is disposed of via contract and taken to the Stafford County landfill.

E.O. 13514, *Leadership in Environmental, Energy, and Economic Performance*, calls for meeting or exceeding fifty percent diversion of non-hazardous solid waste and sixty percent diversion of and construction and demolition debris from landfills by fiscal year 2015. Construction solid waste and recycled material volumes are reported yearly to the NREA, Solid Waste Program Manager to track progress of meeting or exceeding E.O. 13514.

3.10 Recreation

No hunting or fishing is allowed within the FBI complex.

There are no other recreation facilities, such as trails, within the FBI complex.

3.11 Military Training

The FBI property is used for FBI and law enforcement training and does not directly support military training area aboard MCBQ.

3.12 Environmental Justice

E.O. 12898, *Federal Actions to address Environmental Justice in Minority Populations and Low-income Populations*, was issued in 1994. This order directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal policies and actions on these groups. The

proposed action will not involve effects specific to minority or low-income populations.

E.O. 13045, *Protection of Children from Environmental Health and Safety Risk*, was issued in 1997. This order requires agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children. Children are more likely than adults to be adversely affected by environmental contaminants.

Population data does not indicate that census tracts surrounding the project area have higher percentages of minorities, low-income families than Prince William and Stafford Counties as a whole.

4.0 ENVIRONMENTAL CONSEQUENCES

The CEQ regulations implementing NEPA (40 CFR Part 1500) requires impacts discussion, in proportion to their significance, within NEPA documentation. The affected environment under the proposed action alternative ranges from site-specific physical and natural resources to broader regional concerns (i.e., air quality variables, noise, infrastructure, socioeconomic conditions, community facilities and services, transportation and traffic).

This section describes the anticipated direct, indirect, and cumulative environmental impacts of the no action alternative and the action alternative for the proposed FBI facility improvements.

Alternative A is no action and Alternative B is the proposed action. As discussed in Section 2.3 of this EA, no other viable alternatives were identified. Best management practices and measures to mitigate potential impacts are covered in section 4.16.

4.1 Land Use

Impact of Alternative A: Under the no action alternative, the facility upgrades would not be conducted. There would be no new impacts to land use under alternative A.

Impact of Alternative B: Vegetation clearing and change in land use will not be required for the facility improvements proposed under Alternative B. The majority of the work considered in Alternative B would occur within existing buildings. Ground disturbance would result as a part of the external stair and

sidewalk replacements at buildings 3 and 4, addition of LED lighting along Hoover Road and Bureau Parkway.

Soils will be disturbed as a part of this project and potential impacts and mitigations to minimize soil movement are included in Sections 4.2 and 4.15 of this EA. Invasive species must not be planted as a component of this project.

The current land use is FBI and law enforcement training. Alternative B improvements would improve existing facilities and land use would not change.

4.2 Water Resources

Potential impacts to water resources were assessed based on water quality, hydrology, surface water and wetlands, groundwater, and flooding potential in the project area.

Impact of Alternative A: This alternative does not involve alteration of wetlands, surface waters, or associated hydrology. Alternative A would not result in new impacts to water resources.

Impact of Alternative B: As depicted in Figure 4, no streams and wetlands have been identified within the project vicinity.

The proposed action alternative does not require fill within the 100-year or 500-year floodplains. The 100-year floodplain is considered a RMA under the CBPA. None of the onsite wetlands are contiguous to a perennial stream and do not have associated RPAs.

The proposed action alternative is consistent to the maximum extent practicable with the enforceable policies of the VCP. The proposed project is not expected to have adverse effects on Virginia fisheries, shorelines, subaqueous lands, dunes, or coastal lands.

4.3 Biological Resources

Impact of Alternative A: Implementation of the no action alternative, would not have a significant impact on vegetation, wildlife (including migratory birds), or threatened/endangered species.

Impact of Alternative B: The action alternative is compliant with the MBTA and the BGEPA. The nearest historical nest is approximately 1,500 feet west of the project area which is well outside of the 660 foot buffer required under the BGEPA.

No potential SWP habitat (forested areas) will be removed as a part of this project.

Water resources that support the dwarf wedge mussel, harperella, sensitive joint-vetch, waterboatman, and brook floater will not be affected. Best management practices to avoid water quality degradation during construction will be followed to avoid downstream sediments (see Section 4.2 and 4.15.1).

While forest segmentation reduces the amount of contiguous habitat that is available for migratory birds, site clearing associated with the action alternative would not significantly affect the available habitat. The majority of migratory birds listed under the MBTA on MCBQ are waterfowl species. No wetlands or open water will be significantly affected by the proposed construction activities.

MCBQ is committed to supporting migratory bird data collection and monitoring. MCBQ continues to participate in the Monitoring Avian Productivity and Survival (MAPS) program and has been operating stations annually. Additionally, the Marine Corps continues to be an active participant with the Partners in Flight program which a nationwide program to study and manage neotropical migratory birds that breed in North America and migrate to Central and South America to overwinter and habitat conservation efforts integrated into installation management are detailed within the MCBQ Integrated Natural Resources Management Plan.

Construction noise can affect wildlife and influence behavior and movement patterns. The forested buffers completely surrounding the FBI complex will remain in place which will lessen the amount of transmitted noise. Construction noise is expected to be very minimal and will be temporary.

The proposed action will not have significant impacts on threatened and endangered species, migratory birds, or habitats used by these species.

4.4 Cultural Resources

Under Section 106 of the NHPA, a federal agency is required to account for the effects of the proposed action on any historic district, site, building, structure, or object that is included or eligible for inclusion in the NRHP, prior to the expenditure of funds on the action.

Section 110 requires the identification and evaluation of any cultural resources (including archaeological sites) on federal property that meets the eligibility criteria of the NRHP.

Impact of Alternative A: This alternative would not include land disturbance or development so cultural resources would not be affected.

Impact of Alternative B: Per the archaeological surveys listed in Section 8.0 of this EA, there are no known archaeological sites within the project areas. Additionally, this project is neither within a designated historic district nor does it involve buildings that are over 50 years old. The oldest buildings slated for improvements under Alternative B are 42 years old.

Although the site has been covered by past archaeological surveys, there is always the potential for unexpected discoveries. In the event potential human remains (e.g. bones, bone fragments) are discovered, work must be halted or diverted to other areas until appropriate measures are taken. Contract Project Managers must be informed that any human remains encountered are protected by state and federal law. The following procedures must be followed:

- Halt work at the location leaving remains in place and any associated features and objects
- Notify Base Archaeologist/NEPA Section per Section 8.0 of this EA
- Redesign project to avoid remains, if possible
- Base Archaeologist/NEPA Section will contact SHPO, and if remains are Native American will contact tribe(s)
- Removal of remains requires a permit from the SHPO, including the participation of a skeletal biologist or physical anthropologist, and plans to make appropriate notifications to possible descendants/relatives and other measures in accordance with state law and Advisory Council on Historic Preservation guidelines

4.5 Air Quality

MCBQ and the FBI complex are located in a moderate ozone non-attainment area within the Ozone Transport Region, and in a PM_{2.5} non-attainment area.

The General Conformity Rule ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state's plans to meet the NAAQS.

Impact of Alternative A: Alternative A will not have an effect on air quality as no new construction would occur and no new emissions sources added.

Impact of Alternative B: The expected potential air pollutants associated with alternative B would include emissions from construction activities/equipment, crew commuting vehicles, fugitive dust, and from use of other fuel-burning equipment. AHUs, which may contain ozone depleting substances (OSDs) will be replaced within buildings 3, 4, 6, and 13. Replacement HVAC components will be reported to the FBI complex's environmental program which oversees the FBI's air quality permitting requirements. Installation of HVAC components will be conducted by technicians who completed a program compliant with 40 CFR 82.161 and approved by the EPA for work on ozone depleting substance equipment.

The direct and indirect emissions associated with alternative B are not expected to exceed General Conformity Rule *de minimus* emissions levels based on concept site plans.

The proposed action would produce a minor change in air emissions from the use of construction equipment and HVAC components. The new climate control components would not affect the FBI's air quality permit. Annual emissions statements will continue to be submitted as required by the FBI.

The action alternative would not significantly impact the current air quality conditions at MCBQ or the Metropolitan Washington non-attainment area.

4.5.1 Climate Change

CEQ's NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions states that "if a proposed action would be reasonably anticipated to cause direct emissions of 27,563 tpy (25,000 metric tons) or more of CO₂-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public."

Impact of Alternative A: The no action alternative would not cause an increase in greenhouse gas emissions and would not have new effects on climate change. A detailed quantitative and qualitative assessment is not required.

Impact of Alternative B: The proposed project would replace AHUs in building 3, 4, 6, and 13. This equipment will not produce a significant change in GHG emissions.

Construction emissions are short in duration and are not covered by the Mandatory Reporting of Greenhouse Gases rule as the intent is to track and regulate stationary sources. This project would not have any significant changes in stationary or mobile emission sources or landfill operations.

MCBQ address GHG emissions by meeting demands of laws, E.O.s, and policies relating to air quality, GHGs, and climate change. The proposed project will be compliant with E.O. 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* which establishes GHGs as the integrating metric for tracking progress in federal sustainability, requires a deliberative planning process, and links to budget allocations to ensure goal achievement. E.O. 13514 calls for a 34 percent reduction of GHG by 2020.

Best management practices would be required and implemented for activities associated with the proposed action. Construction would be accomplished in full compliance with current Virginia regulatory requirements, with compliant practices and/or products.

By directly inventorying all emissions in a nonattainment region and monitoring concentrations of criteria pollutants in attainment regions, the Commonwealth of Virginia takes into account the effects of all past and present emissions in the state. This is done by putting a regulatory structure in place designed to prevent air quality deterioration for areas that are in attainment with the NAAQS and to reduce common or criteria pollutants emitted in nonattainment areas to levels that will achieve compliance with the NAAQS. This structure of rules and regulations applies either specifically or indirectly to all activities in the region and all activities associated with the proposed action alternative. MCBQ operates under a Title V Operating Permit. Annual reports demonstrating compliance are required under the permit will continue to be submitted. No other large-scale projects or proposals have been identified that, when combined with the proposed action, would threaten the attainment status of the region, would have substantial GHG emissions, or would lead to a violation of any Federal, state, or local air regulation. In compliance with CEQ's and the EPA's guidance, a detailed qualitative and quantitative analysis of CO₂ equivalents is not required for the proposed action.

Alternative B would not significantly contribute to cumulative impacts to air quality, GHGs, or climate change.

4.6 Noise

Impact of Alternative A: There would be no new noise impacts with the no action alternative. Noise levels would remain the same.

Impact of Alternative B: Implementation of the proposed action would generate short-term, temporary noise from construction operations (i.e., noise from construction equipment, supply trucks, and worker vehicles).

Noise from the use and occupation of the facilities after the completion of improvements proposed under Alternative B would be the same as prior to project implementation. Existing noise at and around the project area is largely attributed routine MCBQ and FBI vehicle traffic, operations associated with military training (including range use), and air facility operations. The proposed action alternative would not result in a permanent increase of noise levels.

4.7 Infrastructure, Utilities, and Transportation

Impact of Alternative A: The no construction alternative would not have an impact on existing infrastructure.

Impact of Alternative B: This alternative does not propose additional personnel, new traffic patterns, or significant new utility demands. Installation of new LED lighting would require new electricity connection and demands. Very little land disturbance for electricity connection would be required as electricity supply is already established in the vicinity. Alternative B will have no adverse effect on infrastructure.

4.8 Munitions Response Site

As depicted in Figure 6, Alternative B is situated within UXO Site 033. Munitions have not been cleared from this site. Risks associated with known UXO sites include unintentional detonation, environmental contamination, and human health impacts. Land disturbance greatly increases these risks. There is the high potential to encounter unexploded military munitions, discarded military munitions, and/or munitions and explosives of concern during the intrusive work associated with the placement of LED lighting along Hoover Road and Bureau Parkway and the replacement of exterior stairs at buildings 3 and 4. Prior to any land disturbance within UXO 33, an Explosive Safety Submission (ESS) must be submitted to Marine

Corps Systems Command (MARCORSYSCOM) via NREA to determine clearance requirements before work can begin. There is a high likelihood that clearance of munitions will be required so it is recommended that the project proponent plan for UXO removal during project budgeting. It is recommended that land disturbance be eliminated or reduced within UXO Site 33, if possible. Additionally, a briefing by the Explosive Ordnance Disposal (EOD) will be required for the demolition and construction contractor(s). Contractors must be informed that they are working within a known UXO site and ensure that necessary precautions are taken and that a written plan of action is in place should munitions be discovered during excavation activities. See Section 4.16.1 for mitigation measures.

4.9 Hazardous Materials/Waste/Solid Waste

Impact of Alternative A: The proposed no action would have no effect on general procedures for hazardous materials and hazardous waste management at MCBQ.

Impact of Alternative B: Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets (MSDSs). Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operations; monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation), and biological (e.g., infectious waste) agents; recommend and evaluate controls (e.g., ventilation, respirators) for the protection of personnel; and ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

It is expected that hazardous materials such as paints, solvents, etc. will be utilized during construction. Hazardous materials can become hazardous waste when disposal occurs. Hazardous waste will be removed in accordance with all state and federal regulations. The contractor may not dispose of hazardous materials/waste on MCBQ property.

The location of Alternative B could contain UXO and excavation activities could expose lead or other hazardous munitions constituents during excavation activities. Construction guidelines need to include provisions to be alert for contamination and to follow procedures that would assure health and safety of personnel should hazardous materials/waste be

discovered. Also see Section 4.8 regarding munitions response site information.

All solid waste activities will be covered in the project solid waste management plan. This plan must be submitted to NREA for review prior to receipt of the Notice to Proceed. Submit a copy of the waste management plan to the Contracting Officer and/or designated representative, and to NREA (see Section 8.0 for the solid waste program contact information).

The contractor is responsible for coordinating all solid waste disposals at a landfill that meets all Federal, State, and local regulatory standards. Hazardous waste and universal waste will be disposed of in compliance with all applicable regulations. The contractor will support the solid waste diversion philosophy outlined in E.O. 13514 by recovering/recycling materials.

Alternative B will result in construction waste. Reports of waste generated (including recycling) including material type (Construction Demolition Debris, concrete, scrap metal, used oil, etc), tons, disposal destination, and disposal cost shall be reported via the Construction Waste Management Report (see Appendix A) to MCBQ's Natural Resources and Environmental Affairs Branch within 30 days of the close of the project, and no later than October 15 of the calendar year to be included in annual report submissions.

4.10 Health/Safety

Impact of Alternative A: This alternative would maintain the status quo. Alternative A would not have an impact on health/safety.

Impact of Alternative B: Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by DoD regulations designed to comply with standards issued by the Occupational Safety and Health Administration (OSHA) and EPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors. Construction workers would not be exposed to greater safety risks from the inherent dangers at construction sites. Contractors would be required to establish and maintain safety. Therefore, the proposed construction would not introduce new or

unusual safety risks, assuming construction protocols are followed.

Operation of the upgraded FBI facilities would not pose health and safety risks to the general public. Implementation of Alternative B would not have an adverse effect on health and safety.

4.11 Environmental Justice/Socioeconomics

Impact of Alternative A or B: Population data reveals that census tracts surrounding the project area have higher percentages of minorities and low-income families than Prince William and Stafford Counties as a whole. While the proposed project would occur near populations containing children, it will not significantly affect the health of these children. Temporary minor impacts such as noise created by construction activities would occur but these impacts will not disproportionately affect children. Best management practices such as dust management would also be employed to eliminate or keep temporary environmental nuisances to a minimum.

Implementing any of the proposed alternatives would not be expected to significantly impact the socioeconomics or create disproportionately high and adverse human health or environmental effects to minority or low-income populations, or children at MCBQ or in the surrounding area.

The expansion of the facility, as proposed in Alternative B, would result in new employment opportunities. This will result in a minor positive impact to the community. It is expected that any new job vacancies would be filled via the surrounding community. New pressures on community infrastructure and school districts are not expected to occur.

4.12 Recreation

Impact of Alternative A: There would be no site work with this alternative and there would be no impact to recreation aboard MCBQ.

Impact of Alternative B: The site is located within a no hunting zone. No hunting, fishing, or hiking/biking/running paths exist within the FBI complex.

4.13 Military Training

Impact of Alternative A: This alternative does not involve any construction and would not have any effects on military training.

Impact of Alternative B: The FBI complex is not used as a military training area. Alternative B will not cause impacts to military training.

4.14 Cumulative Impacts

For NEPA analysis, a cumulative impact is defined as the impact on the environment, which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future action. Impacts can result from individually minor but collectively significant actions taking place over a period of time.

The following are past, present, or foreseeable future projects within the FBI complex:

The FBI Police Unit is proposing a fenced-in K-9 training area near the FBI west gate and the FBI Hostage Rescue Team is proposing a pre-engineered building to temporarily house K-9s. These K-9 facilities would have no significant impact provided mitigation measures are followed. The fenced training area would be located within known UXO site 33 and UXO coordination and possible clearance would be required.

A PCB compliance agreement between the FBI and the EPA is currently being developed for testing and removal of unauthorized PCB containing building components present throughout the FBI Complex.

Building 9 is being partially renovated. These renovations include a new set of basement egress stairs and renovations to the kitchen and dining areas. An EA was completed for this project in August 2012.

Interior renovations to building 7 and 8 are proposed. Renovations would include upgrades to the building's electrical and plumbing systems. An EA was completed for this project in October 2012.

Renovations to range 2 and Range 3 will improve briefing areas and provide for cosmetic updates to the control tower. An EA was completed in November 2012.

Building 12 is being partially renovated. Renovations include new classroom space and restroom space. Additionally, three air handler units will be replaced in kind and all ductwork will be cleaned. The cooling towers will also be replaced. An EA was completed in January 2013.

Demolition of building 27905 will involve the demolition of the Academy's Range building. This building is unsuitable for habitation and is costly to maintain. An EA was completed by the FBI.

All of these projects constitute minor work and/or renovations and will not add more personnel to the FBI complex. All mentioned EAs resulted in a Finding of No Significant Impact (FONSI). These projects will not have a considerable effect upon the FBI complex or MCBQ when evaluated collectively.

The proposed action alternative (Alternative B) will not have significant cumulative impacts when considered with past, present, and foreseeable future projects. Appropriate avoidance and mitigation measures will occur throughout project implementation to ensure potential impacts remain below significant levels.

4.15 Unavoidable Impacts

It is not expected that there will be unavoidable permanent impacts associated with the implementation of Alternative A or B. Alternative B will result in temporary impacts related to noise as discussed in sections 3.6 and 4.6 of this EA. Section 4.15 outlines Best Management Practices/Further Actions Required by Project Proponent that will ensure potential impacts remain below significant levels.

4.16 Best Management Practices/Further Actions Required by Project Proponent

4.16.1 Mitigation regarding UXO Site 33

Intrusive work will require the FBI to prepare an Explosive Safety Submission (ESS) for submittal to Marine Corps Systems Command (MARCORSYSCOM). If deemed a requirement, subsurface removal action may need to be performed by a qualified UXO contractor. At this time, Environmental Restoration Program, Navy (ER,N) funding is not programmed to clean up the location of Alternative B so the FBI project manager shall ensure funding is available to cover the munitions removal action, if required.

Guidance regarding preparation of and ESS can be found in the Naval Ordnance Safety and Security Activity (NOSSA) Instruction 8020.15D located at Appendix B.

4.16.2 Mitigation of Effects to Water Quality

The implementation of basic erosion and sediment control practices would be required during land disturbing activities associated with LED lighting installation and exterior stair and sidewalk replacements. Appropriate measures are specified in the Virginia Erosion and Sediment Control Handbook (VDCR 1992) and should be included in the project design. The proper installation and maintenance of erosion and sediment controls would minimize the movement of disturbed soils off-site and into the Potomac River watershed. It is not expected that land disturbance will be significant enough to require a Virginia Stormwater Management Program (VSMP) permit issued through the Virginia Department of Environmental Quality. The project must adhere to the new VSMP regulations per 9VAC25-870 which went into effect 1 July 2014.

4.16.3 Cultural Resources

In the event potential human remains (e.g. bones, bone fragments) are discovered, work must be halted or diverted to other areas until appropriate measures are taken. Contract Project Managers must be informed that any human remains encountered are protected by state and federal law. The following procedures must be followed:

- Halt work at the location leaving remains in place and any associated features and objects
- Notify Base Archaeologist/NEPA Section per Section 8.0 of this EA
- Redesign project to avoid remains, if possible
- Base Archaeologist/NEPA Section will contact SHPO, and if remains are Native American will contact tribe(s)
- Removal of remains requires a permit from the SHPO, including the participation of a skeletal biologist or physical anthropologist, and plans to make appropriate notifications to possible descendants/relatives and other measures in accordance with state law and Advisory Council on Historic Preservation guidelines

4.16.4 Minimization of Dust

The contractor must follow Best Management Practices for dust reduction, which may include suppression through water application.

4.16.6 Waste Management Plan/Construction Waste Management Report

The contractor must submit a Construction Waste Management Plan to the NREA, Solid Waste Program Manager (See Section 8.0 of this EA) prior to starting construction. The contractor must submit the Construction Waste Management Report included in Appendix A by October 15 or within 30 days of the project close.

5.0 CONCLUSION

The work proposed under the action alternative (Alternative B), if conducted by the Marine Corps, would meet the criteria for a categorical exclusion (CATEX) per Marine Corps Order P5090.2A Change 3 paragraph 12001.3.a(34) for new construction that is similar to existing land use and, when completed, the use or operation of which complies with existing regulatory requirements (e.g., a building within a cantonment area with associated discharges/runoff within existing handling capacities) and paragraph 12001.3.a(8) for routine repair and maintenance of buildings, facilities, vessels, aircraft, and equipment associated with existing operations and activities. The FBI does not have a list of approved CATEXs nor can FBI projects apply Marine Corps CATEXs and, therefore, an EA was prepared for the proposed project.

Two alternatives regarding the FBI Facility Improvements were examined. Alternative A would have no adverse effect on the natural environment but would not allow for necessary life and safety improvements. A summary of potential impacts of Alternative B is included in Table 3. The potential adverse effects of Alternative B regarding water quality and a known munitions response site would be mitigated through measures detailed in section 4.16.1 and 4.16.2 of this EA. With avoidance and mitigation measures, Alternative B would not have significant impacts on the natural or human environments and the preparation of an Environmental Impact Statement is not required.

Table 3. Summary of Impacts Alternatives A and B

Resources		Alternative A (No Action)	Alternative B (Proposed Action)
Land Use			
	Geology	0	0
	Soils	0	1/N/T
	Topography	0	0
Water Resources			
	Surface Waters	0	0
	Wetlands	0	0
	Floodplains	0	0
	Groundwater	0	0
	Stormwater	0	1/N/T
Biological Resources			
	Vegetation	0	0
	Wildlife/Habitat	0	0
	T&E Species	0	0
Cultural Resources		0	0
Air Quality/Climate Change		0	1/N/T
Noise		0	0
Infrastructure			
	Utilities	0	0
	Transportation	0	0
Socioeconomics			
	Demographics	0	0
	Environmental Justice	0	0
	Employment/Income	0	1/P/T
Health/Safety/UXO		0	2/N/T
Hazardous Materials/Waste and Solid Waste		0	1/N/T
Recreation		0	0
Military Training		0	0

3= High Impact, 2=Moderate Impact, 1=Low Impact, 0=Negligible/No Impact

P=Positive Impact, N=Negative Impact, T=Temporary (generally during construction)

6.0 DOCUMENT PREPARER

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Natural Resources and Environmental Affairs Branch

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9.0 REFERENCES

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Clean Air Act of 1970, as Amended 42 USC § 7401 *et seq*
Coastal Zone Management Act of 1972, as Amended 16 USC § 1451, *et seq*.

Erosion and Sediment Control Regulations (VR 625-02-00) Erosion and Sediment Control Law, Article 4, Chapter 5 of Title 10.1 of the Code of Virginia.

Executive Order 12989, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.

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

Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance.

National Historic Preservation Act, Public Law 89-665; 16 U.S.C. 470 *et seq*.

U.S. Migratory Bird Treaty Act, 16 USC 701-712.

U.S. Endangered Species Act, 16 USC 1531-1544.

U.S. Clean Water Act, 33 USC 1344.

Appendix A
Construction Waste Management Report

Construction Waste Management Report Quantico Marine Corps Base

Report Date: _____
 Project Number: _____ Project Name: _____
 Contract Number: _____ Contract Task Order/Delivery Order: _____
 Reporting Period: _____ to _____

SUBMIT THIS FORM BY FAX TO (703) 784-4953, OR BY EMAIL TO: ronald.king@usmc.mil

Comments: _____

Waste Stream	Disposal (Tons)	Disposal Cost	Recycled (Tons)	Recycled Cost	Recycled Revenues
C&D		\$		\$	\$

CONSTRUCTION & DEMOLITION DEBRIS (C&D).

- Record hazardous and non-hazardous C&D waste as one entry. Enter total tons of C&D disposed of in a landfill, by incineration, and/or by hazardous waste contract.
- Enter total disposal cost for C&D.
- Enter the recycled hazardous and non-hazardous C&D tons as one entry under the recycling column. You can also claim C&D diversion conducted by a construction contractor or MILCON project. If you have recycled C&D, it is likely that some was disposed of as well. Therefore, if there are recycled tons of C&D there should be some disposed tons of C&D.
- Enter the cost associated with recycling. Recycling costs include handling, processing, transportation, and other costs associated with recycling C&D. Soils that are used at another location or that are reclaimed count toward recycling.
- Enter Recycling Revenues. Enter only actual revenues received from recycling. Do not enter cost avoidance for recycling revenues.

Reported by: _____
 Company: _____ Contact: _____
 Address: _____ Title: _____
 _____ E-mail address: _____
 Telephone: _____ Fax: _____

Definitions:

Construction and Demolition (C&D) Debris. Waste derived from the construction, renovation, demolition or deconstruction of residential and commercial buildings and their infrastructure. C&D waste typically includes concrete, wood, metals, gypsum wallboard, asphalt, and roofing material.

Other Select Waste (OSW). Construction and demolition debris are the "Other Select Waste" categories for purposes of DoD metric reporting via SW module. If the Other Select Wastes are hazardous they must also be reported in the calendar year HW module.

Appendix B

NOSSA Instruction 8020.15D



DEPARTMENT OF THE NAVY
NAVAL ORDNANCE SAFETY AND SECURITY ACTIVITY
FARRAGUT HALL
3817 STRAUSS AVENUE, SUITE 108
INDIAN HEAD, MD 20640-5151

NOSSAINST 8020.15D
Ser N49/2094
18 Apr 13

NOSSA INSTRUCTION 8020.15D

From: Commanding Officer, Naval Ordnance Safety and Security Activity

Subj: EXPLOSIVES SAFETY REVIEW, OVERSIGHT, AND VERIFICATION OF MUNITIONS RESPONSES (U)

Ref: (a) OPNAVINST 8020.14A
(b) OPNAVINST 8020.15A/MCO 8020.13A
(c) NAVSEA OP 5, Volume 1
(d) OPNAVINST 8027.1G/MCO 8027.1D

Encl: (1) Munitions Response Site Identification and Notification Report
(2) Explosives Safety Submission Determination Requests
(3) Guide for Preparing an Explosives Safety Submission
(4) Munitions Response Site Self-Assessment Checklist
(5) Guide for Preparing a Munitions Response Site After-Action Report
(6) Definitions and Abbreviations

1. Purpose. To assign responsibility and establish procedures and reporting requirements to enable the Naval Ordnance Safety and Security Activity (NOSSA) to provide effective review, oversight, and verification of the explosives safety aspects of munitions responses, as required by references (a) and (b).

2. Cancellation. NOSSAINST 8020.15C. This revised instruction is substantially changed and should be reviewed in its entirety.

3. Background.

a. The Navy executes munitions responses at Munitions Response Sites (MRSs) and other defense sites to address explosives safety, human health, or environmental risks posed by munitions and explosives of concern (MEC) and material potentially presenting an explosive hazard (MPPEH). Some munitions responses are undertaken voluntarily to support military construction or other mission needs while others are

DOUBLE CLICK TO VIEW

ENVIRONMENTAL ASSESSMENT
FOR
DEMOLITION OF BUILDING 2109
AT
MARINE CORPS AIR FACILITY
MARINE CORPS BASE QUANTICO,
PRINCE WILLIAM COUNTY, VIRGINIA

National Environmental Policy Act (NEPA) Coordination Section
Natural Resources and Environmental Affairs Branch
Installation and Environment Division
Marine Corps Base Quantico, Virginia

August 2014

Proposed Agency Action: Demolition of Building 2109
Marine Corps Base Quantico, Virginia

Type of Statement: Environmental Assessment

Lead Agency: United States Marine Corps

For further information on this NEPA document:
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Quantico, VA 22134
Heather.a.mcduff@usmc.mil
(703) 432-6771

Document Date: August 2014

Abstract: This Environmental Assessment is intended to meet NEPA requirements to demolish building 2109 at the Marine Corps Air Facility. The No Action Alternative (Alternative A) and the Action Alternative (Alternative B) were evaluated. Alternative A would have no adverse effects on cultural/natural resources or the human environment as the status quo would be maintained.

Alternative B would demolish building 2109, which is a contributing element to the Quantico Marine Corps Base Historic District. There would be no significant impacts to land use, water resources, biological resources, air quality, noise, infrastructure, traffic, socioeconomics, or hazardous waste issues. Demolition of 2109 would be an adverse effect to the Historic District. This effect would be mitigated through the complete documentation of the building prior to demolition. Temporary water quality impacts associated with soil disturbance resulting from demolition activities would be mitigated through appropriate Erosion and Sediment Control measures per the Virginia Erosion and Sediment Control Handbook.

Alternative B is the preferred action and, if the stated mitigation measures are executed, would not have significant impacts on the human environment.

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1.0 PURPOSE AND NEED FOR THE PROPOSED ACTION

This environmental assessment (EA) has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969; regulations of the Council on Environmental Quality (CEQ) 40 C.F.R. parts 1500-1508; and Marine Corps Order (MCO) P5090.2A Ch. 3, which documents the US Marine Corps' (USMC) internal operating instructions on how to implement NEPA. This EA is intended to meet NEPA requirements for the demolition of building 2109 (b-2109) on the Marine Corps Air Facility (MCAF), at Marine Corps Base Quantico (MCBQ).

This EA also satisfies 36 C.F.R. part 800.6(a) which states that a federal agency when presented with the potential of an adverse effect as a result of its undertaking must "develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects on historic properties."

1.1 Conditions of building 2109

Building 2109 was constructed in 1944. Its original and current use is as a dining facility. It is a single level building constructed of red brick on a concrete foundation. A historical architecture inventory performed in 1994 described the building condition as "Fair" and did not consider it to be a contributing element to the Historic District. It was redesignated as contributing in 2008.

The building is identified as a clear zone violation and an airspace obstruction. The building is also considered to be substandard in terms of function, siting, and capacity. According to MCO 11010.16, dining facilities are not considered to be compatible clear zone land uses. Renovation of an airspace obstruction is permitted provided the facility isn't being converted to another use.

Building 2109 currently operates under a Naval Air Systems Command (NAVAIR) waiver, however, it is the long-term goal of both MCBQ and the MCAF to remove all airspace obstructions. The base Air Installation Compatible Use Zone (AICUZ) document addresses airspace obstructions by stating that if a building is operating under a waiver, it should be demolished if it is no longer required. Renovation of b-2109 is impractical due to the current construction of a new dining facility.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 Alternative A - No Action

Under the no action alternative, b-2109 would be left "as is". It would continue to be an airspace obstruction and clear zone violation for the MCAF. Since a new dining facility is currently under construction, b-2109 would be left vacant. This alternative would result in the continued degradation of a building containing hazardous materials, such as lead-based paint and asbestos.

2.2 Alternative B - Demolition of building 2109

Under this alternative, b-2109 would be demolished. All utilities would be disconnected and capped, and the site graded and seeded. The demolition would be part of the ongoing project to construct a new dining facility and bachelor enlisted quarters, which was covered under a previous EA.

3.0 Existing Environmental Conditions

CEQ regulations for implementing NEPA (40 C.F.R. part 1500) require documentation that succinctly describes the environment of the area or areas potentially affected by the alternatives being considered under the proposed action, and discusses the impacts in proportion to their significance.

Both alternatives under consideration for this proposal are located on the MCAF within the Mainside at MCBQ, in Prince William County, Virginia. The existing environmental conditions described in this section will be the same for all alternatives.

3.1 Land Use

MCBQ is divided into two areas; Mainside, 6,000 acres east of Interstate 95 and U.S. Route 1, and Guadalcanal, 53,200 acres west of the same highways. The MCAF is located on Mainside, east of the CSX-owned rail line and adjacent to the Potomac River.

3.1.1 Geology

The proposed action would occur within the Mainside portion of the base, which lies in the Coastal Plain geologic region. The region consists of Mesozoic and Cenozoic marine sediments, some consolidated into sandstone and marl. The project area is

specifically within the Patapsco formation, which dates to the Cretaceous Period at the end of the Mesozoic Era. It is comprised of sand and clay from shallow aquatic deposits, which cover Pre-Cambrian crystalline rock with a thickness of approximately 150 feet. These deposits are generally unconsolidated.

3.1.2 Soils

The soils found in the Coastal Plain are the result of the soil formation on the underlying sediments. Soils of the project area are highly disturbed due to past construction and development. The soil type located at b-2109 is composed of Cut and Fill Land (Cw). This soil is not uniform, and it has been removed or reworked by machinery. This type of soil is not hydric. Hydric soils are soils that are saturated long enough during the growing season to develop oxygen deficient conditions in their upper portions and are typically associated with wetlands. The Cw soil series is not a highly erodible soil. Soil type maps are at Appendix B.

A geotechnical survey has not been completed for the proposed action. It is advised that a geotechnical engineer survey the underlying soil in the event that these areas should be redeveloped in the future.

3.1.3 Topography

The terrain of the proposed demolition project area consists of disturbed, man-made landscapes. The area is flat due to development and is located at an elevation of about ten feet above sea level.

3.2 Water Resources

Due to the rugged upper Coastal Plain topography and proximity to various water bodies, activities conducted on the Base could potentially affect the water resources of the area.

Activities in surface waters (including streams) and wetlands are regulated under numerous federal laws, regulations, and policies. The proposed action would be bound by the following:

- The Clean Water Act (CWA), 33 U.S.C. §1344 (Section 404) requires a permit from the US Army Corps of Engineers for the discharge of dredged or fill material in to "waters

of the US", a term that includes most streams, wetlands, and ponds.

- Executive Order (E.O.) 11990, *Protection of Wetlands*, requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.
- Department of the Navy "no net loss" policy, for implementing E.O. 11990.

The Commonwealth of Virginia also regulates streams and wetlands that are considered "waters of the state" through a number of laws and provisions. Any action that requires a federal Section 404 permit may also require a water quality certification per CWA 33 U.S.C. §1341 (Section 401) from the Virginia Department of Environmental Quality (VDEQ) and, under certain circumstances, the Virginia Marine Resources Commission.

In 1988, Virginia enacted the Chesapeake Bay Preservation Act (CBPA), Code of Virginia, Title 10.1-Conservation, Chapter 21. This Act established a cooperative program between state and local governments to improve water quality in the Bay by requiring resource management practices in the use and development of environmentally sensitive land features. As defined by the CBPA, Resource Protection Areas (RPA) are buffer zones that include all areas within 100 feet of a tidal wetland, contiguous non-tidal wetlands, or perennial streams. Other areas are designated as Resource Management Areas (RMA). The RMA includes the 100-year floodplain, highly erodible soils, highly permeable soils, and non-tidal wetlands that are not part of an RPA. The Department of Defense is a signatory to an agreement supporting the CBPA and its associated regulations and will comply to the maximum extent possible consistent with the military mission and budget constraints.

Potential water quality impacts from soil disturbances will be mitigated through the implementation of Best Management Practices (BMPs) per the Virginia Erosion and Sediment Control Handbook (1992). The demolition projects will require installation of proper E&SC measures (such as proper silt fence and storm drain inlets) prior to the onset of land disturbing activities.

3.2.1 Surface Waters

The MCAF lies along the west bank of the Potomac River and generally northeast of Chopawamsic Creek.

3.2.2 Wetlands

No wetlands exist in the proposed project area. The nearest wetland is Chopawamsic Creek, located approximately 0.5 mile southwest of b-2109, and is separated from the project area by Bauer Road, residential and administrative buildings, and a railroad bed.

3.2.3 Floodplains

Executive Order 11988 (1977), *Floodplain Management*, requires federal agencies to take action to minimize occupancy and modification of floodplains. The order specifically prohibits federal agencies from funding construction in the 100-year floodplain unless no practicable alternative exists.

The area of MCAF is depicted on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) number 51153C0318D, panel 318 of 330. The FIRM shows b-2109 outside of Flood Zone X (unshaded) which is an area outside of the 500-year floodplain. The FIRM is at Appendix C.

3.2.4 Groundwater

The Potomac Aquifer extends from New Jersey in the north, to North Carolina in the south, and eastward under the Chesapeake Bay. The MCBQ lies within this aquifer. In this aquifer, water can be reached at depths between 200 and 350 feet. One of the largest surface recharge areas for the Potomac Aquifer exists in Stafford County, near Interstate 95. No comprehensive studies of groundwater resources have been conducted at MCBQ to date.

3.2.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 (16 U.S.C. §1451, et seq., as amended) provides guidance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. The CZMA states that "the boundary of a State's coastal zone must exclude lands owned, leased, held in trust or whose use is otherwise by law subject solely to the discretion of the Federal Government, its officers, or agents" [16 U.S.C. §1453 (1)]. According to this statute, MCBQ is not within Virginia's coastal zone.

The CZMA 16 U.S.C. §1456 (Section 307) covers coordination and cooperation issues. Section 307 mandates that federal projects that affect land uses, water uses, or other coastal resources of

a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally approved coastal management plan. If a proposed federal project or activity affects coastal resources or uses beyond the boundaries of the federal property, Section 307 of the CZMA applies.

The Commonwealth of Virginia has developed and implemented a federally approved coastal resources management program (CRMP) describing current coastal legislation and enforceable policies. The Virginia CRMP has nine enforceable policies, which include wetlands management, fisheries management, subaqueous lands management, dune management, non-point source pollution control, point source pollution control, shoreline sanitation, air pollution control, and coastal lands management.

3.2.6 Stormwater

The proposed project areas are located upslope from the Potomac River, a significant water resource. Stormwater runoff from the area surrounding b-2109 is discharged into the Potomac River via drainage outlets. Sheet flows from the area can also reach the river.

3.3 Biological Resources

3.3.1 Vegetation

The land adjacent to this project area is maintained grass, buildings, parking areas, and aircraft runways. The project area is not forested. Land disturbance will be limited to the footprint of the building and vegetation clearing will be minimal.

3.3.2 Wildlife

The base supports a wide variety of both game and non-game species and a diversity of wildlife habitat is available. Game species include white-tailed deer, wild turkey, gray squirrel, cottontail rabbit and bobwhite quail. Non-game species include resident and migratory songbirds, raptors, and various reptiles, amphibians, and insects.

Migratory birds utilize a variety of habitats available throughout MCBQ including forestland, grassland, wetland, and riparian corridors.

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. §701-12) protects all species covered by the four migratory bird treaties the United States signed with Canada, Mexico, Japan, and Russia. The MBTA prohibits taking (e.g., pursuing, hunting, shooting, wounding, trapping, capturing, or collecting, or attempting to pursue, hunt, shoot, wound, trap, capture, or collect, intentionally or unintentionally), killing, or possessing of migratory birds (including parts, feathers, nests, and eggs) unless permitted by the Secretary of the Interior. The United States Fish and Wildlife Service (USFWS) currently recognizes 832 species of migratory birds.

Per Executive Order 13186, Responsibilities of Federal Agencies to Migratory Birds (2001), Department of Defense (DoD), and USFWS set forth a Memorandum of Understanding (MOU) to promote the conservation of migratory birds and their habitats. Habitat that would be considered critical to the natural history and/or life cycle of migratory birds is not located within the proposed development areas of Alternative 2.

Bald eagles, which are protected under the MBTA, are discussed within the threatened and endangered species/species of concern portion (3.3.3) of this EA.

3.3.3 Threatened and Endangered Species

The Endangered Species Act (ESA), 7 U.S.C. §136, 16 U.S.C. §1531 et seq., requires federal agencies to ensure that their actions will not jeopardize the continued existence of any threatened or endangered species or result in the destruction or adverse modification of its critical habitat.

Three plant species on MCBQ are federally listed as threatened or endangered species. These include Harperella (*Ptilimnium nodosum*), small whorled pogonia (*Isotria medeoloides*), and sensitive joint-vetch (*Aeschynomene virginica*).

Harperella is a federally listed endangered plant species native to riverine habitats. This plant is only found in 13 areas ranging from Maryland to Georgia.

The small whorled pogonia (SWP) is a federally listed threatened species. The SWP is a perennial plant that generally occurs on gentle to moderate slopes with eastern or northern exposures and prefers acidic sandy loam soils with low nutrient content.

Sensitive joint-vetch is a federally listed threatened annual legume found along the Potomac River that prefers slightly brackish tidal river systems.

One animal species, the dwarf wedge mussel (*Alasmidonta heterodon*), is federally listed as endangered. This small bivalve lives in freshwater streams and requires highly oxygenated and silt-free waters.

The bald eagle, *Haliaeetus leucocephalus*, was removed from the Federal List of Endangered and Threatened Wildlife and Plants in 2007 due to population recovery. The bald eagle is still afforded federal protection under the MBTA (see Section 3.3.2) and the Bald and Golden Eagle Protection Act (BGEPA) of 1940, as amended (16 U.S.C. §668-668d, 54 Stat. 250), and is listed as a species of concern in the USFWS Birds of Conservation Concern, 2008. The BGEPA requires a buffer of 660 feet around a nesting site. No nesting sites have been observed in the project area.

Marine Corps Order P5090.2A, Ch. 3 directs the USMC to comply with environmental requirements, protect the environment and human health, and enhance and sustain mission readiness, to include cooperating with the Commonwealth of Virginia to protect Virginia-listed rare species and to provide consideration of state-listed species during the NEPA process. According to Chief of Naval Operations Instruction (OPNAVINST) 5090.1B, it is Navy and Marine Corps policy to cooperate with states to protect state-listed species, if mission compatible. Hence, MCBQ also considers project impacts to Virginia-listed rare species and state listed species during the NEPA process.

The Virginia Piedmont waterboatman, *Sigara depressa*, and the brook floater, *Alasmidonta varicose*, are two Virginia-listed endangered faunal species. Both species are water dependant. The Virginia Piedmont waterboatman is an insect that inhabits ponds and extremely slow moving streams. The brook floater is a bivalve that is found among boulders within gravel or sand.

3.4 Cultural Resources

Implementation of the proposed action must comply with the National Historic Preservation Act (NHPA) of 1966, (16 U.S.C. §470 et seq.). Under the NHPA, consideration of historic preservation issues must be integrated into the early planning stages of project planning by federal agencies. Under NHPA 36 C.F.R. part 800 (Section 106), a federal agency is required to account for the effects of the proposed action on any district,

site, building, structure, or object that is included or eligible for inclusion in the National Register of Historic Places (NRHP), prior to the expenditure of funds on the action. Under NHPA 16 U.S.C. §470 (Section 110), the identification and evaluation of any cultural resources on federal property that meet the eligibility criteria of the NRHP is required.

Building 2109 is listed in the NRHP as a contributing element of the Quantico Marine Corps Base Historic District.

Architectural historians with the U.S. Army Construction Engineering Research Laboratory (USCERL) conducted a survey of Quantico buildings between 1992 and 1994 (USCERL 1994). They identified significant historic buildings and landscapes on the base, including b-2109. Seven themes forming the historic context for the subsequently nominated Quantico Marine Corps Base Historic District include: First Permanent Construction, Aviation, Education, Industrial, Naval Clinic, African American Barracks, and Lustron Housing.

3.5 Air Quality

National Ambient Air Quality Standards

The U.S. Environmental Protection Agency (EPA) defines ambient air as "that portion of the atmosphere, external to buildings, to which the general public has access" (40 C.F.R. part 50). In compliance with the 1970 Clean Air Act (CAA) (42 U.S.C. §7401 et seq., as amended in 1977 and 1990) the EPA promulgated the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO₂), particulate matter (PM), ozone, nitrogen dioxide (NO_x), and lead. States are required to develop a State Implementation Plan (SIP) to attain and maintain the NAAQS, with specific requirements for areas that do not meet the NAAQS, called nonattainment areas. The location of the proposed action is within the Metropolitan Washington (DC) Region that has been designated as a moderate non-attainment area for the 8-hour ozone NAAQS and a general non-attainment for PM_{2.5}. NO_x and volatile organic compounds (VOCs) are precursors to ozone formation and are regulated to control ozone pollution.

General Conformity

To ensure that actions taken by federal agencies in a nonattainment area do not interfere with a state's plan for attainment of the NAAQS, EPA promulgated the General Conformity

rule [CAA section 176(c) (4)]. The General Conformity rule requires federal actions, whose emissions exceed "*de minimis*" thresholds of criteria pollutants and their precursors, to undergo a Conformity Determination. A Conformity Determination is a detailed analysis the action's impact on regional air quality. *De minimis* levels in the DC region are:

- NO_x: 100 tons per year (tpy)
- VOC: 50 tpy
- PM_{2.5}: 100 tpy

An Applicability Analysis is the first step in the Conformity process, used to determine if a full Conformity Determination must support the action. Proposed actions may be exempt from a Conformity Determination by two means:

1. If EPA identifies the action in 40 C.F.R. 93.153(c) (2) as resulting in no emissions increase or an increase that is clearly *de minimis*.
2. If emissions from the action, including construction and post construction activities, are calculated and determined to fall below the *de minimis* emission rates.

If the Conformity Analysis indicates that the action falls into one of the listed actions or the emissions are below *de minimis* thresholds, no further action is necessary. For actions that exceed *de minimis* thresholds and are not exempt, a Conformity Determination is required.

A Conformity Determination requires detailed direct and indirect emissions estimates, dispersion modeling analysis, and mitigation of air quality impacts, and an opportunity for public comment prior to approval.

Ozone Depleting Substances

Title VI of the CAA regulates the manufacture and use of ozone depleting substances (ODS) typically found in certain refrigerants, fire extinguishers, and consumer products. Work on equipment containing ODS must be performed only by technicians who are certified through an EPA accredited course. 40 C.F.R. part 82 requires strict production, consumption, recycling, and emission reduction programs.

The base operates a number of heating, ventilation, and air conditioning (HVAC) units that use ODS.

Virginia SIP Regulations

Virginia's SIP includes a number of broadly applicable regulations as well as process-specific regulations for existing sources intended to ensure continued progress towards attainment of all NAAQS.

New Source Review Permitting

New Source Review (NSR) is implemented by the States and requires that construction or modification of regulated stationary sources undergo a preconstruction permitting process. NSR is used to define what equipment may be installed, pollution controls that may be required, operating parameters, and notification, recordkeeping, and reporting requirements.

The stringency of an NSR permit depends on the size of the stationary source and the region in which it is located. Permitting programs exist for both major and minor sources located in NAAQS attainment or nonattainment areas.

- Minor New Source Review (Minor NSR). Minor NSR permits are required when a source does not meet the definition of a major source, but is large enough to interfere with a state's plan for attaining or maintaining the NAAQS. Minor NSR permits may also be used to limit emissions from a project that would otherwise be subject to major source permitting.
- Prevention of Significant Deterioration (PSD). PSD permits are issued for new major sources of air pollution or major modifications to existing major sources of air pollution in a NAAQS *attainment* area. PSD permits require application of Best Available Control Technology (BACT), dispersion modeling, and public notification and comment periods.
- Nonattainment New Source Review (N-A NSR). N-A NSR permits are issued for new major sources of air pollution or major modifications to existing major sources of air pollution in a NAAQS *nonattainment* area. N-A NSR requires application of Lowest Achievable Emissions Rate (LAER) and public notification and comment periods. In addition, facilities are required to offset the potential increase in emissions with a greater reduction in actual emissions elsewhere in the region to ensure improvement of the local air quality.

A case-by-case review of each new stationary source or modification is required to determine which permitting program is applicable. Generally, NO_x from fuel combustion is the limiting pollutant at MCBQ. Since MCBQ is a major source of NO_x pollution in an ozone nonattainment area, any project that has a potential to emit (PTE) greater than 40 tpy of NO_x will be subject to N-A NSR permitting. A project with a PTE greater than 10 tpy but less than 40 tpy of NO_x will be subject to Minor NSR permitting. Projects with a PTE less than 10 tpy of NO_x are typically exempt from preconstruction permitting requirements (however, they may still be considered significant equipment in a Title V operating permit).

Title V Permitting

Generally, major sources of pollution are required to obtain federal operating permits issued under Title V of the CAA by either the EPA or the state regulatory agency. The primary purpose of a Title V permit is to improve compliance at a source by consolidating all requirements into a single document. Title V permits are reviewed and reissued on a 5 year cycle. While some changes to equipment may occur as "off-permit" changes and may be incorporated into the next permit renewal, most NSR permit actions require modification of the Title V permit within 12 months.

In the DC ozone nonattainment area, any source with a NO_x PTE greater than 100 tpy is a major source and must apply for a Title V Permit within 12 months of being designated such.

The base's NO_x PTE is well above 100 tpy. The base currently operates under a Title V permit issued by the Virginia Department of Environmental Quality (VA DEQ) issued on 2 September 2003. Renewal applications are pending.

3.5.1 Climate Change

Greenhouse Gas (GHG) reporting and permitting are the newest broad scale programs under the CAA. In 2009, the EPA determined that GHGs have a detrimental effect on human health and the environment and began developing regulatory programs to limit the emission of GHGs.

Greenhouse gases (GHG) are atmospheric compounds that contribute to the greenhouse effect. GHGs include CO₂, CH₄, and N₂O, and fluorinated gases. The greenhouse effect is a natural phenomenon that causes heat to be trapped within the lowest

portion of the earth's atmosphere creating a wide range of environmental concerns referred to as climate change. Climate change is associated with rising global temperatures, sea level rise, changing weather patterns, changes to local and regional ecosystems including the potential loss of species, longer growing seasons, and shifts in plant and animal ranges. Most GHGs occur naturally within the atmosphere but scientific evidence indicates a trend of increasing global temperature over the past century due to a combination of natural occurrences and an increase in GHG emissions from human activities (Intergovernmental Panel on Climate Change, 2007).

According to the Quadrennial Defense Review Report of February 2010, the DoD has recognized that climate change will affect the DoD operating environment, roles, and missions undertaken; furthermore, adjustments due to climate change impacts on facilities and military capabilities will be necessary. The DoD has made a commitment to foster efforts to assess, adapt to, and mitigate the impacts of climate change. Specifically, the DoD has leveraged the Strategic Environmental Research and Development Program, a joint effort among the DoD, the Department of Energy, and the EPA, to develop climate change assessment tools.

GHG Reporting

In October 2009, the EPA promulgated the GHG Reporting Rule in 40 C.F.R. part 98. The rule establishes mandatory reporting requirements for facilities that fit into any of three applicability classifications.

A facility may be required to report GHG emissions if it falls into an "all-in" source category defined in 40 C.F.R. 98.2(a) (1). One of these categories is Municipal Solid Waste (MSW) Landfills that emit more than 25,000 metric tons of carbon dioxide equivalents (CO₂e) in a year and accepted waste after 1 January 1980. The base has three MSW landfills, two of which accepted waste after 1 January 1980.

A facility may also be required to report if it falls into a second set of defined source categories and emits more than 25,000 metric tons of CO₂e in a year. The second set of categories includes production facilities outlined in 40 C.F.R. 98.2(a)(2). The base does not operate any of these facilities.

Finally, a facility may be required to report if it does not meet either of the first two requirements, but it does operate

stationary fuel combustion equipment with an aggregate rated heat input capacity of at least 30 MMBtu/hr and the facility emits more than 25,000 metric tons of CO₂e in a year from these sources. The aggregate rated heat input capacity of MCBQ is well in excess of 30 MMBtu/hr.

The base's MSW landfills and stationary fuel combustion equipment emissions are evaluated annually to determine applicability of Part 98. The most recent calculations demonstrate that, based on 2013 data, Part 98 reporting requirements do not apply to the base. As of 2013, base-wide CO₂e emissions from stationary fuel combustion equipment totaled 18,658 tons.

GHG Permitting

The NSR and Title V permitting programs apply to GHGs if a facility is subject to those programs for other pollutants. While traditional permitting thresholds for NSR and Title V technically apply to GHGs, actual application of those thresholds has been found impractical to use as thresholds for GHGs. In response, EPA has used its discretion to increase the thresholds under those programs for GHGs so that excessive GHG regulation and controls is avoided. The current threshold for significant emissions increases of GHGs is 75,000 TPY of CO₂e or more, and the Title V threshold for GHGs is 100,000 TPY of CO₂e or more. If GHG emissions are included in any NSR permit issued to MCBQ, then BACT and other NSR requirements will apply and be reflected in the MCBQ Title V permit.

On 23 June 2014, the U.S. Supreme Court issued a decision that said EPA could not require a source to obtain a PSD or Title V permit based on GHG emissions alone. However, sources that must obtain PSD or Title V permits based on regulated NSR pollutants may still be required to control GHG emissions by application of BACT.

Pending further court action, a new stationary source at MCBQ may be subject to BACT for GHGs if it causes a significant emissions increase of a regulated NSR pollutant and also an emissions increase of 75,000 CO₂e or more.

3.6 Noise

Noise, often defined as unwanted sound, is one of the most common environmental issues associated with military installations. The major sources of noise at MCBQ include

aircraft, artillery, small arms, explosives, vehicles, heavy equipment, and machinery.

Existing noise levels in the project area are primarily from air operations at the adjacent MCAF and the nearby CSX rail line. Other noise contributions come from temporary construction activities, but these are minor. Ordnance used in live and simulated fire exercises, is generally conducted at ranges on the Guadalcanal side of the base, eight miles or more from the project area. There would be no additional new sources of noise associated with the sites after demolition activities.

3.7 Infrastructure, Utilities, and Transportation

3.7.1 Infrastructure and Utilities

Building 2109 is currently served by all necessary utilities. Utilities specifically serving b-2109 will be disconnected and capped. Other area utilities will not be removed because of the proposed demolition activities.

3.7.2 Transportation

No roads, parking lots, or parking structures will be demolished as a part of the proposed alternatives. The proposed action alternative would not create a significant increase in daytime traffic during the workweek. Demolition crews associated with this project would not create a significant impact on traffic or parking availability.

3.8 Environmental Justice

Executive Order 12898, *Federal Actions to address Environmental Justice in Minority Populations and Low-income Populations*, was issued in 1994. This order directs agencies to address environmental and human health conditions in minority and low-income communities to avoid the disproportionate placement of any adverse effects from federal policies and actions on these groups. The proposed action will not involve effects specific to minority or low-income populations.

Executive Order 13045, *Protection of Children from Environmental Health and Safety Risk*, was issued in 1997. This order requires agencies, to the extent permitted by law and mission, to identify and assess environmental health and safety risks that might disproportionately affect children. The proposed action will not involve effects specific to children.

3.9 Hazardous Materials/Waste

Due to the age of b-2109, asbestos containing materials, Polychlorinated biphenyls (PCBs), and lead-based paints could be present. Disposal of these materials would be accomplished in compliance with all applicable regulations.

There is no impact from hazardous materials and/or waste anticipated with these projects.

Many portions of MCBQ consist of historic munitions impact sites. The proposed action would not take place within or near a known Munitions Response Site or former impact area. However, excavation activities may expose lead or other munitions constituents during excavating activities.

According to the Marine Corps Order 5090.2A Ch. 3, Chapter 10, Section 2, Paragraph 10221:

"All efforts must be made to ensure that Marine Corps' projects are not constructed on contaminated sites. However, there may be times when the project is being planned or is underway and contamination is discovered.

1. If contamination is discovered during the planning stage, Naval Facilities Engineering Command (NAVFAC) can investigate and determine the need for clean up using Environmental Restoration Program, Navy (ER, N) funds and following environmental restoration (ER) procedures. However, the site investigation/clean-up must compete with other ER sites based on risk management. In most cases, this will take several years and the site may not be available in time for the project.

2. If contamination is discovered during construction and it is Defense Environmental Restoration Program (DERP) eligible, NAVFAC can carry out the site investigation/cleanup using ER,N funds. However, the site will compete with other ER sites based on risk management. If ER,N funding is not available in time to meet the construction schedule, the installation must use project funds to investigate/clean up the site. If neither ER,N nor project funding is available in time to meet the construction schedule, the installation must stop the project altogether or re-site it. An installation does not have an option to pay for any DERP-eligible work with installation Navy Operations and Maintenance (OM,N) funds except to accomplish DERP-eligible work within the scope of an OM,N funded construction project."

3.10 Solid Waste

Reports of waste generated (including recycling) including material type (construction/demolition debris, concrete, scrap metal, used oil, etc.), tons, disposal destination, and disposal cost shall be reported on the attached Waste Management Plan and submitted to the NREA Branch within 30 days of the close of the project, and no later than October 15 of the respective calendar year to be included in annual report submissions.

Executive Order 13514, *Leadership in Environmental, Energy, and Economic Performance*, 2009, calls for meeting or exceeding fifty percent diversion of non-hazardous solid waste, construction, materials, and debris from landfills by fiscal year 2015.

3.11 Recreation

The area surrounding b-2109 is within a no hunting zone, and no trails or other recreation areas are adjacent to this area. Hunting and fishing activities occur on Chopawamsic Creek and the Potomac River. Duck blinds are located approximately 0.5 mile to the northeast, and in several locations in Chopawamsic Creek.

3.12 Military Training

Building 2109 is within the MCAF, on the Mainside of MCBQ and within an area used for administrative, operational, and residential facilities. The Officer Candidates School (OCS) is located approximately 0.75 miles south-southwest.

4.0 ENVIRONMENTAL CONSEQUENCES

The CEQ regulations implementing NEPA (40 C.F.R. part 1500) require discussion of the impacts in proportion to their significance within NEPA documentation. The affected environment under the proposed action alternative ranges from site-specific physical and natural resources to broader regional concerns (i.e., air quality variables, noise, infrastructure, socioeconomic conditions, community facilities and services, transportation and traffic).

This section describes the anticipated direct, indirect, and cumulative environmental impacts of the no action alternative and one action alternative for demolition of b-2109.

Alternative A is no action and Alternative B is the proposed action.

4.1 Land Use

Impact of Alternative A: The no action alternative would result in the continued existence of b-2109. Alternative A would not be expected to impact the current geologic, topographic, or soil conditions at MCBQ or the surrounding area.

Impact of Alternative B: Alternative B would not have a significant effect on the land use MCAF. The intended land use for MCAF is military training and flight operations.

No land clearing activities would be conducted as a part of the proposed demolition.

Of the alternatives would be expected either to significantly change or affect the geology of the area, nor would they affect the topography of the base.

To prevent the loss or movement of soils from the disturbed areas, erosion and sediment control measures would be implemented during construction. Approximately 0.25 acres of land would be disturbed to implement Alternative B. With implementation of proper erosion and sediment control measures, the action alternative is not expected to significantly impact on-site or area soils. Erosion and sediment control (E&SC) plans and stormwater pollution prevention plans (SWPPP) are required to be submitted to the Water Program Manager, NREA Branch, MCBQ at least 70 days prior to work starting on the project.

4.2 Water Resources

Potential impacts to the water resources were assessed based on the water quality, hydrology, surface water and wetlands, groundwater, and flooding potential in the project area.

Impact of Alternative A: It is expected that impacts to water resources would remain the same if no action is taken.

Impact of Alternative B: The action alternative, Alternative B, would demolish b-2109. The removal of vegetation associated with this project is minimal and any additional impervious surfaces would be negligible.

It is expected that impacts to water resources would remain unchanged if Alternative A were implemented. Building 2109 currently constitutes an impervious surface, which can contribute to increased stormwater velocity. Area stormwater flows discharge to the Potomac River.

The proposed action, Alternative B, would provide for the demolition of b-2109. The addition of vegetation would reduce impervious surfaces at the MCAF, resulting in slower stormwater velocity, thus improving and protecting water quality.

No wetlands or surface waters will be directly affected through filling or alteration of hydrology. Potential water quality impacts from soil disturbances will be mitigated through the implementation of Best Management Practices (BMPs) per the Virginia Erosion and Sediment Control Handbook (1992). The demolition projects will require installation of proper E&SC measures (such as proper silt fence and storm drain inlets) prior to the onset of land disturbing activities.

The proposed action alternative would require no fill within the 100-year floodplain, which is considered an RMA under the CBPA. None of the alternatives would adversely affect an RPA or RMA as defined under the CBPA.

The proposed demolition projects are consistent to the maximum extent practicable with the enforceable policies of Virginia's Coastal Management Plan. The proposed project is not expected to directly affect water resources (including wetlands) and not expected to have adverse effects on fisheries, shorelines, subaqueous lands, dunes, or coastal lands.

Alternative B would not adversely affect wetlands, surface waters, groundwater, CBPA requirements, or floodplain areas.

4.3 Biological Resources

Impact of Alternative A: Implementation of the no action alternative, Alternative A, would not have a significant impact on vegetation, wildlife, or threatened or endangered species.

Impact of Alternative B: Demolition of b-2109 would have no adverse effects on wildlife (including migratory birds) or wildlife habitat.

No colonies of SWP are located in the proposed project area. Suitable habitat for the SWP has not been identified in the

project area. The dwarf wedge mussel and harperella are not found in areas that would be affected by implementation of Alternative B.

Due to the scope of work and the required BMPs to protect water quality, there is no potential for the action alternative to adversely affect threatened and endangered species, or habitats used by these species. The demolition of b-2109 would have no adverse effects on wildlife (including migratory birds) or wildlife habitat.

The proposed demolition projects will not have an adverse effect on vegetation since land clearing will not be required.

4.4 Cultural Resources

Impact of Alternative A: This alternative would have no additional adverse effects upon the NRHP-eligible Quantico Marine Corps Base Historic District. The building would remain in poor condition. Archeological resources would not be impacted.

Impact of Alternative B: Demolition of b-2109, as proposed under Alternative B, would constitute an adverse effect on the Quantico Marine Corps Base Historic District. Per a Memorandum of Agreement (MOA) under negotiation with the Virginia State Historic Preservation Officer (SHPO), the removal of b-2109 from the Historic District would be mitigated by photo and written documentation of the buildings prior to demolition. The draft MOA is at Appendix D.

Demolition of b-2109 is not expected to have an impact on archaeological resources. Ground disturbing activities will be limited to areas which been determined to have no potential for significant archaeological resources. These areas have been previously disturbed.

For excavations permitted where, there are no known archaeological sites or cemeteries, contractors must still use caution. Some areas are urban terrain and have been significantly modified or disturbed. However, there may be undisturbed soil zones encountered adjacent to or under previous disturbances/fill.

The demolition contractor should contact the base Archaeologist, NEPA Section (703-432-6781/0519) immediately if artifacts (e.g.,

metal tools, arrowheads, etc.) appearing to pre-date the 20th century or unusual soil zones are encountered during excavation.

In the event there are any unexpected discoveries of potential human remains (e.g., bones or bone fragments), work must be halted or diverted to other areas until appropriate measures are taken. Contract Project Managers must be informed that state and federal law protects any human remains encountered. The following procedures must be followed:

- Halt work at the location leaving remains in place and any associated features and objects
- Notify base Archaeologist/NEPA Section per Section 8.0 of this EA
- Redesign project to avoid remains, if possible
- Base Archaeologist/NEPA Section will contact the SHPO, and if remains are Native American will contact tribe(s)
- Removal of remains requires a permit from the SHPO, including the participation of a skeletal biologist or physical anthropologist, and plans to make appropriate notifications to possible descendants/relatives and other measures in accordance with state law and Advisory Council on Historic Preservation guidelines

4.5 Air Quality

The General Conformity Rule ensures that the actions taken by federal agencies in nonattainment and maintenance areas do not interfere with a state's plans to meet the NAAQS.

A federal agency must perform a General Conformity applicability analysis prior to initiating any non-exempt action that will cause emissions of criteria pollutants for which the area is designated nonattainment or maintenance. The analysis must include reasonable estimates of direct emissions (caused by the action; occur at the same time and place) and indirect emissions (caused by the action; may occur later in time or in a different location than the action). The analysis must be performed for each year of the action and one year of typical operations. If the analysis indicates that the emission levels are below *de minimis* thresholds for all years, then no further action is necessary.

Impact of Alternative A: The no action alternative would not have an impact on air quality.

Impact of Alternative B: Demolition of b-2109 is not anticipated to have an adverse effect on air quality.

General Conformity

Annual direct and indirect emissions from the proposed action are calculated to be below all applicable de minimis thresholds in 40 C.F.R. 93.153(b). A General Conformity Determination is not required. Emissions calculations for this project are at Appendix E.

POLLUTANT	CONSTRUCTION EMISSION RATE (tpy)	TYPICAL OPERATION EMISSION RATE (tpy)	DE MINIMIS THRESHOLD (tpy)
NO _x	0.44	N/A	100
VOC	0.04	N/A	50
PM _{2.5}	0.05	N/A	100

New Source Performance Standards

There are no applicable NSPS regulations for the proposed action.

National Emission Standards for Hazardous Air Pollutants

There are no applicable NESHAP regulations for the proposed action.

Ozone Depleting Substances

The proposed action includes disposal of ODS containing equipment.

Technicians certified through an EPA accredited program and coordinated with the Natural Resources and Environmental Affairs Branch (NREA) must perform work on these systems. Detailed service records must be submitted to NREA, including the following information:

- ODS technician certificate
- Make, model, and serial number of equipment
- ODS type and capacity of equipment
- Amount of ODS added, removed, or lost
- Description of any leaks found and work performed
- Initial and follow up leak checks, if applicable.

Units to be disposed: Recover refrigerant by evacuating circuit to the appropriate vacuum level. Tag unit as "Refrigerant Recovered" prior to disposal. CFCs 11, 12, 114, 500, 502; Halons 1202, 1211, 1301, 2402; and HCFC-22 must be turned-in to the DoD ODS Reserve at DLA Distribution in Richmond, VA. The Reserve accepts both used and new CFCs, Halons, and HCFC-22 in a relatively pure state (i.e. not as a component of other products).

Virginia SIP Regulations

The proposed action is subject to the following Virginia regulations:

- 9 VAC 5-40, Article 1 - Visible Emissions and Fugitive Dust/Emissions
- 9 VAC 5-40, Article 2 - Odor

Visible Emissions and Fugitive Dust/Emissions

No owner or other person shall cause or permit any materials or property to be handled, transported, stored, used, constructed, altered, repaired or demolished without taking reasonable precautions to prevent particulate matter from becoming airborne. Such reasonable precautions may include, but are not limited to, the following:

1. Use, where possible, of water or chemicals for control of dust in the demolition of existing buildings or structures, construction operations, the grading of roads or the clearing of land.
2. Application of asphalt, water, or suitable chemicals on dirt roads, materials stockpiles and other surfaces, which may create airborne dust; the paving of roadways and maintaining them in a clean condition.
3. Installation and use of hoods, fans and fabric filters to enclose and vent the handling of dusty materials. Adequate containment methods shall be employed during sandblasting or other similar operations.
4. Open equipment for conveying or transporting materials likely to create objectionable air pollution when airborne shall be covered or treated in an equally effective manner at all times when in motion.
5. The prompt removal of spilled or tracked dirt or other materials from paved streets and of dried sediments resulting from soil erosion.

Odor

No owner or other person shall cause or permit to be discharged into the atmosphere from any affected facility any emissions, which cause an odor objectionable to individuals of ordinary sensibility.

New Source Review Permitting

The proposed action does not involve the construction of any new stationary source or any project (which includes any addition or replacement of an emissions unit, any modification to an emissions unit or any combination of these changes), or the reduction of any stack outlet elevation at any stationary source. Therefore, NSR permitting regulations do not apply.

Title V Permitting

The proposed action involves the removal of an insignificant emissions unit. The change will be processed in the next Title V renewal application (9 VAC 5-80-280, Operational Flexibility).

Climate Change

CEQ's NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions states that "if a proposed action would be reasonably anticipated to cause direct emissions of 27,563 tpy (25,000 metric tons) or more of CO₂-equivalent GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public." These recommendations are consistent with the EPA's Mandatory Reporting of Greenhouse Gases rule (40 C.F.R. part 98) (2009), which applies to all stationary sources emitting 27,563 tpy or more of GHG emissions. The rule allows data collection to help shape future climate change policies and programs but does not require control of GHGs.

Impact of Alternative A: The no action alternative would not cause an increase in greenhouse gas emissions and would not have new effects on climate change.

Impact of Alternative B: The proposed project will not add new emission sources. This project will not encourage a use change; the proposed project supports the current MCAF mission activities within the MCAF. Demolition emissions would be short and are not covered by the Mandatory Reporting of Greenhouse

Gases rule, as the intent is to track and regulate stationary sources. This project would not have any long-term changes in stationary or mobile emission sources or landfill operations. In compliance with the CEQ's and EPA's guidance, quantitative analysis of CO2 equivalents is not required for the proposed action.

GHG Reporting

Actual emissions from the proposed action are not expected to cause the total GHG emissions from MCBQ to exceed mandatory reporting thresholds.

GHG PSD Permitting

The proposed action does not involve the construction of any new stationary source or any project (which includes any addition or replacement of an emissions unit, any modification to an emissions unit or any combination of these changes), or the reduction of any stack outlet elevation at any stationary source. Therefore, GHG PSD permitting regulations do not apply.

GHG Title V Permitting

Actual emissions from the proposed action are not anticipated to cause the GHG PTE of the entire base to exceed 100,000 tpy, so the base will remain exempt from Title V permitting requirements for GHGs.

4.6 Noise

Existing noise at and around the project area is largely attributed to activities associated with operations at MCAF and rail traffic on the nearby CSX rail line.

Impact of Alternative A: The no action alternative would not affect existing noise levels on the base or the surrounding area.

Impact of Alternative B: Implementation of the proposed action would generate short-term, temporary noise from demolition operations (i.e., noise from construction equipment, supply trucks, and worker vehicles). The proposed action alternative would not have a permanent increase on noise levels.

Noise associated with demolition activities under Alternative B would be temporary. Given the type and duration of the noise to

be generated and the ambient noise level adjacent to the project site, noise generated by demolition activities is not expected to result in significant noise impacts. No post-demolition noise is expected at the site.

4.7 Infrastructure, Utilities, and Transportation

Impact of Alternative A or B: Due to the scope of the proposed work, implementation of either of the alternatives would not be expected to alter the existing infrastructure or utilities within MCBQ and will not affect traffic patterns. Utilities associated with b-2109 will be capped as part of the demolition project. Demolition crews would not have a significant impact on traffic or parking space availability.

4.8 Environmental Justice

Impact of Alternative A or B: Implementing either of the proposed alternatives would not be expected to significantly impact the socioeconomics or create disproportionately high and adverse human health or environmental effects to minority, low-income populations, or children at MCBQ or in the surrounding area.

This project will have temporary minor impacts such as noise created by construction activities and these impacts will not disproportionately affect minority, low-income populations, or children. Best management practices such as dust management would also be employed to eliminate or keep temporary environmental nuisances to a minimum.

4.9 Health/Safety and Munitions Response Program

Impact of Alternative A: This alternative would maintain the status quo and would not have additional effects on health and safety.

Impact of Alternative B: Although the project area is not within any known munitions response sites, MCBQ includes active and former ranges and there is always the potential to encounter unexploded military munitions, discarded military munitions, and/or munitions and explosives of concern during excavating activities and earth disturbing activities. Much of the MCAF is constructed on fill, but it is not clear where the fill dirt originated. Potential land disturbances associated with this project would include, but not be limited to, demolition of b-

2109 and its foundation, post-demolition grading, and vegetation.

The location of b-2109 is not a UXO site or a known former impact area.

According to the MCO 5090.2A. Ch. 3, Chapter 10, Section 2, Paragraph 10221, if contamination is discovered during construction and it is Defense Environmental Restoration Program (DERP) eligible, NAVFACENGCOM can carry out the site investigation/cleanup using ER,N funds. However, the site will compete with other ER sites based on risk management. If ER,N funding is not available in time to meet the construction schedule, the installation must use project funds to investigate/clean up the site.

4.10 Hazardous Materials/Waste/Solid Waste

There is no adverse impact from hazardous materials/waste or solid waste anticipated with this project.

Impact of Alternative A: This alternative would have no effect on general procedures and practices for hazardous material removal, hazardous waste management, or solid waste management at MCBQ.

Impact of Alternative B: The Action Alternative would result in construction demolition debris (CDD) and waste. Reports of waste generated (including recycling) including material type (CDD, concrete, scrap metal, used oil, etc.), tons, disposal destination, and disposal cost shall be reported via the Construction Waste Management Report to NREA within 30 days of the close of the project, and no later than October 15, to be included in annual report submissions (see Appendix E). All spoils and debris generated by the demolition operation shall be transported off base and disposed of in accordance with all federal, state, and local regulations.

The demolition contractor is responsible for coordinating all solid waste disposals at a landfill that meets all Federal, State, and local regulatory standards. The contractor will support the solid waste diversion philosophy outlined in E.O. 13514 by recovering/recycling.

Neither alternative would have an effect on general procedures for removal of hazardous materials and hazardous waste

management at MCBQ. No hazardous materials would be introduced under either of the alternatives.

4.11 Recreation

Hunting, fishing, and hiking areas do not exist in the immediate proposed project area. Demolition of b-2109 would not have an adverse effect on hunting, fishing, or hiking opportunities aboard MCBQ.

4.12 Military Training

Impact of Alternative A: This alternative does not involve any construction or demolition, and would not have any additional effects on military training.

Impact of Alternative B: Alternative B could temporarily affect the military training on the MCAF during demolition activities. Helicopter and other aircraft operations occur routinely within the MCAF, which could be impacted in the event mechanical crane usage is needed for demolition. The MCAF must be informed prior to crane erection, as coordination with the Federal Aviation Administration may be required.

4.13 Cumulative Impacts

For NEPA analysis, a cumulative impact is defined as the impact on the environment, which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future action. Impacts can result from individually minor but collectively significant actions taking place over a period.

The following actions are recent past, ongoing, or future projects adjacent to b-2109 or the Quantico Marine Corps Base Historic District in general:

Past projects:

- Construction of a Headquarters Building at OCS
- Construction of a Dining Facility at OCS

Ongoing projects:

- Construction of a Bachelor Enlisted Quarters and a Dining Facility at MCAF
- Demolition of building 2101

- Development at Marine Corps University, including several construction and demolition projects

Future projects:

- Demolition of Larson Gym, building 2112. This building is a contributing building to the Quantico Marine Corps Base Historic District. This building is not compliant with the air installation compatible use zone/land use.
- Reconfiguration of the MCAF Entry Control Point
- Cherry Hill Third Track
- Demolition of the Brig, building 3247
- Demolition of building 2106

Mitigation measures similar to those outlined in this EA for B-2109 will or have been completed for the above-mentioned projects as necessary. Consultation with the SHPO is also completed for all construction and demolition projects at MCBQ as necessary.

4.14 Unavoidable Adverse Impacts

The primary adverse impact associated with this action is the impact to the Quantico Marine Corps Base Historic District, avoided only in the no action alternative, Alternative A.

Measures to mitigate this impact to the Quantico Marine Corps Base Historic District are detailed in section 4.15.1.

4.15 Mitigation Measures

4.15.1 Mitigation of Effects to Historic Resources

An MOA between MCBQ and the Virginia SHPO has been drafted and consultation is in progress. The agreement stipulates that photo and written documentation of b-2109 is required prior to demolition, which, if implemented, satisfies the NHPA.

4.15.2 Mitigation of Effects to Water Quality

The implementation of basic erosion and sediment control practices will be required during demolition as specified in the Virginia Erosion and Sediment Control Handbook (VDCR 1992). The proper installation and maintenance of E&SC measures will minimize the movement of disturbed soils off-site and into the

Potomac River watershed. Following demolition, the disturbed area will be seeded and returned to pervious surfaces.

5.0 CONCLUSION

Two alternatives regarding the demolition of b-2109 have been evaluated. The adverse effects of Alternative B to the Quantico Marine Corps Base Historic District are minor, and mitigation measures will be implemented as agreed upon through ongoing consultation with the SHPO.

The project proponent has determined that Alternative B is the preferred alternative. It is also the environmentally preferred alternative, as a potential source of hazardous materials would be removed, and impervious surfaces would be eliminated, leading to improved water quality. Alternative B would not have significant impacts on the human environment.

6.0 LIST OF PREPARERS

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7.0 LIST OF AGENCIES AND PERSONS CONTACTED

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Mr. Robert Stamps, Fish and Wildlife Section Head
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Mr. Andrew McClelland, Air Program Manager

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Mr. Nathan Stokes, Associate Counsel

Facilities Manager, Marine Corps Air Facility, Quantico, VA
22134
Mr. Paul Dodd

8.0 REFERENCES

40 CFR parts 1500-1508, Council on Environmental Quality.

Bald and Golden Protection Eagle Act, 1940 (16 U.S.C. §668-668d, 54 Stat. 250).

Chesapeake Bay Preservation Act, 1988 (Code of Virginia, Title 10.1-Conservation, Chapter 21).

Clean Air Act, 1970 (42 U.S.C. §7401 et seq., as amended in 1977 and 1990).

Clean Water Act, 1972 (33 U.S.C. §1251 et seq.).

Coastal Zone Management Act, 1972 (16 U.S.C. §1451, et seq., as amended).

Endangered Species Act, 1973 (7 U.S.C. §136, 16 U.S.C. §1531 et seq.).

Executive Order (E.O.) 11988, *Floodplain Management*, 1977.

E.O. 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations*, 1994.

E.O. 13045, *Protection of Children from Environmental Health and Safety Risk*, 1997.

E.O. 13186, *Responsibilities of Federal Agencies to Migratory Birds*, 2001.

E.O. 13514, *Leadership in Environmental, Energy, and Economic Performance*, 2009.

Intergovernmental Panel on Climate Change (IPCC), 2007.

Mandatory Reporting of Greenhouse Gases rule (40 C.F.R. Part 98), Environmental Protection Agency, 2009.

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Marine Corps Order P5090.2A Ch 2, 2009.

Migratory Bird Treaty Act, 1918 (16 U.S.C. §701-12).

National Environmental Policy Act, 1969 (42 U.S.C. §4321 et seq.).

National Historic Preservation Act, 1966 (16 U.S.C. §470 et seq.).

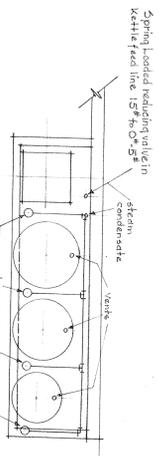
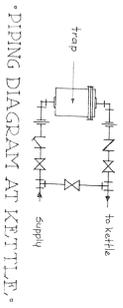
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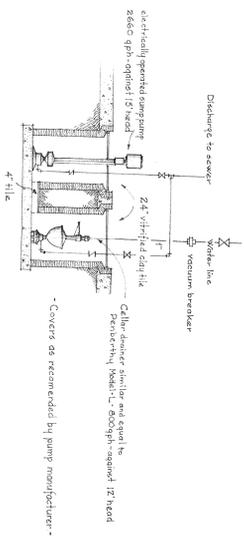
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1992 *Virginia Erosion and Sediment Control Handbook*, Richmond,
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APPENDIX A
Maps and Photographs

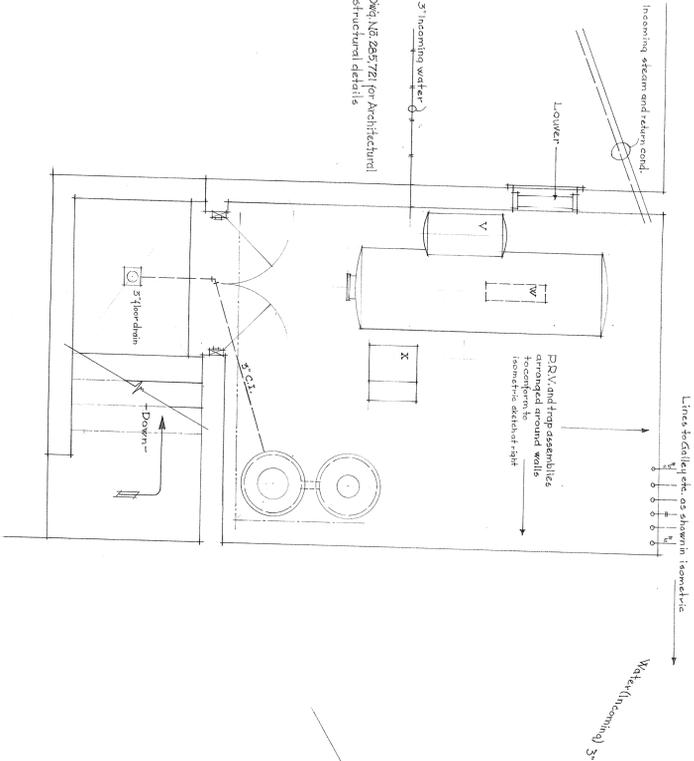
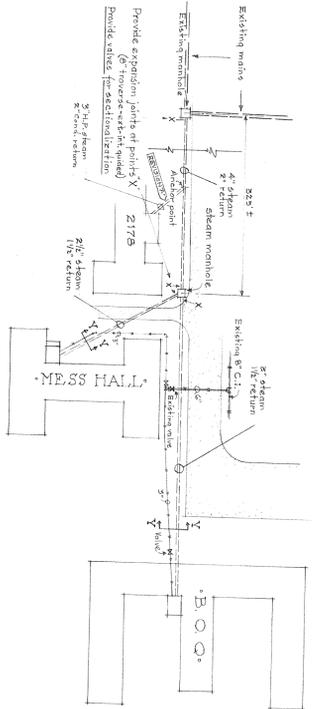


• LINES AT STEAM KETTLES.
• SCALE 3/8"=1'-0"
• See Y&D DWG. NO. 285,728 for feed locations.

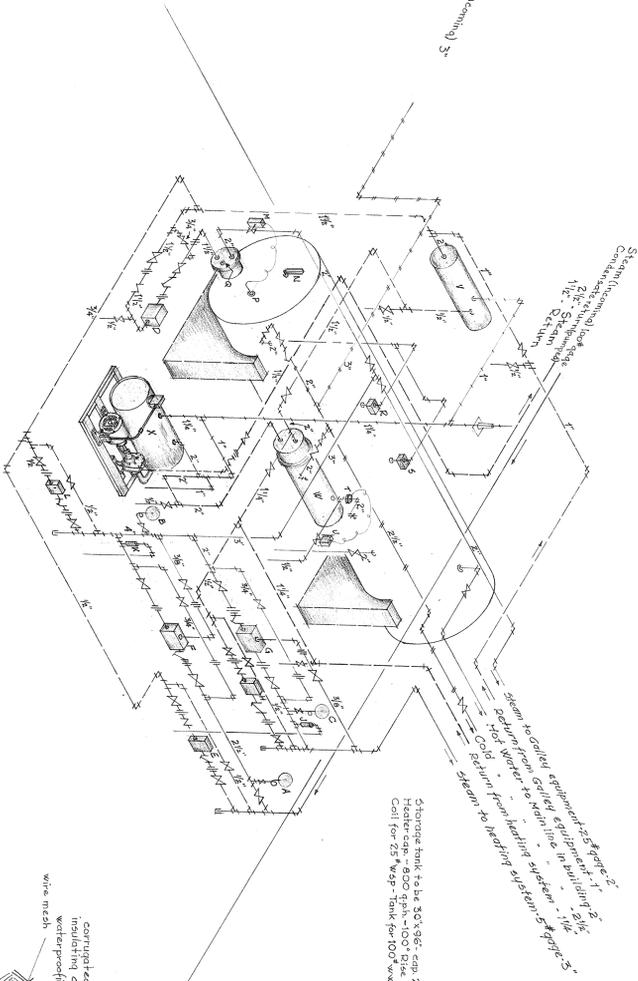


• SECTIONAL ELEVATION THRU SUMP PIT.
• SCALE 3/8"=1'-0"

• PLOT PLAN.
• SCALE 1"=60'



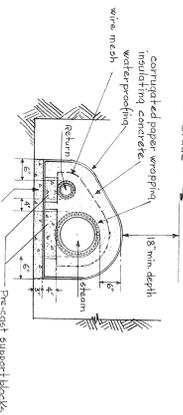
• ISOMETRIC-PIPING-DIAGRAM.
• NO SCALE.



• LEGEND.

- Steam
- Condensate
- Water (Feed)
- Vent to atmosphere
- Thermometer 40-240°F
- Vacuum breaker
- Temperature relief 200°F
- Pressure relief 110°F
- Mercury switch 180°F
- Isometric standard right

• TYPICAL SECTION THRU.



SEE LETTER NOV. 17, 1943. DATED 2/15/44

SHEET 19 OF 47

RECORDS SECTION

Y. Y. Y.

Approved

1943

Y&D Drawing No.

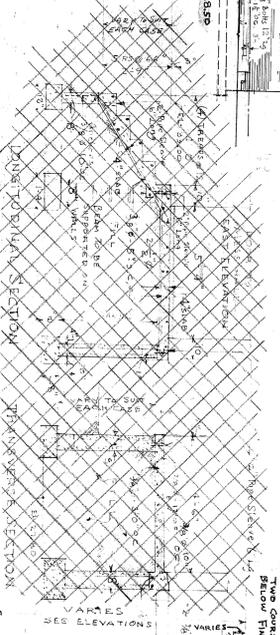
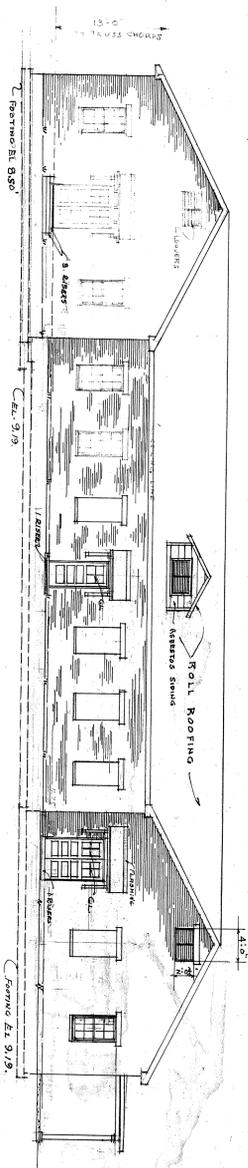
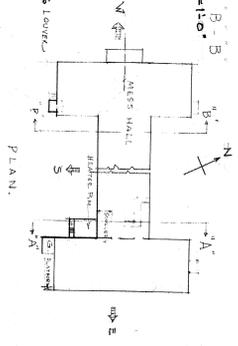
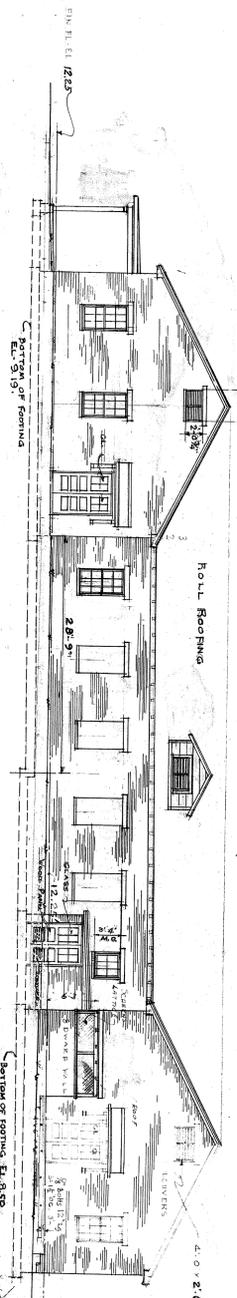
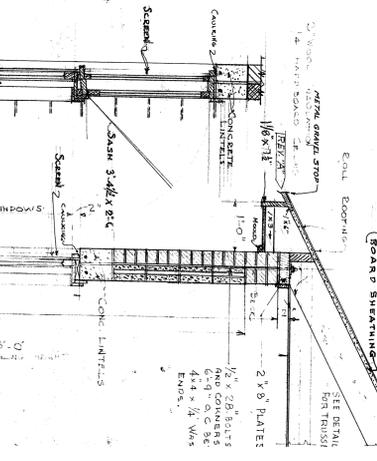
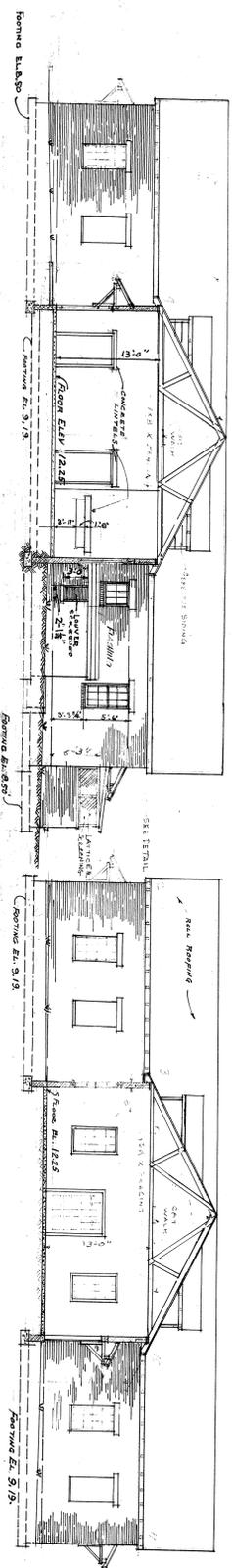
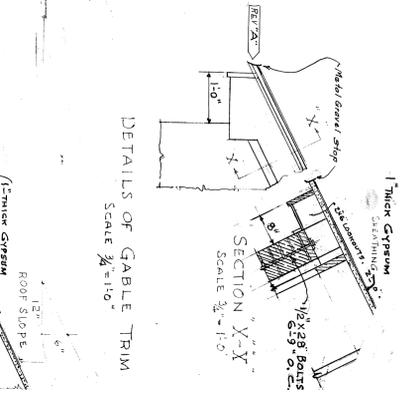
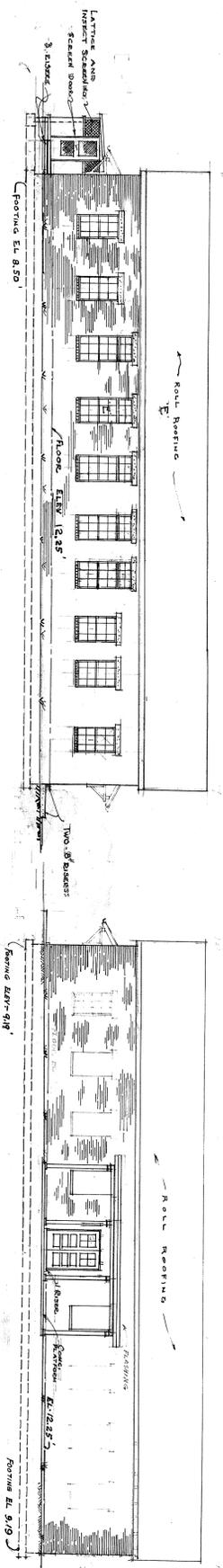
285,727

Submitted Dec. 4, 1943

2484 2109

Public Works Officer

DESIGNED BY	1/15/44	Revised to conform to as built conditions.
CHECKED BY	DATE	NAVY DEPARTMENT - BUREAU YARDS & DOCKS
CHIEF OF DIVISION		Approved
DESIGNED BY		1943
CHIEF OF DIVISION		Y&D Drawing No.
CHIEF OF DIVISION		285,727
CHIEF OF DIVISION		Submitted Dec. 4, 1943
CHIEF OF DIVISION		2484 2109
CHIEF OF DIVISION		Public Works Officer



NOTE:
FOR FINISHED GRADES SEE
Y & D DRAWING NO. 205, 490

NOTE:
TWO COURSE BRICK
OVER FINISH ANCHOR

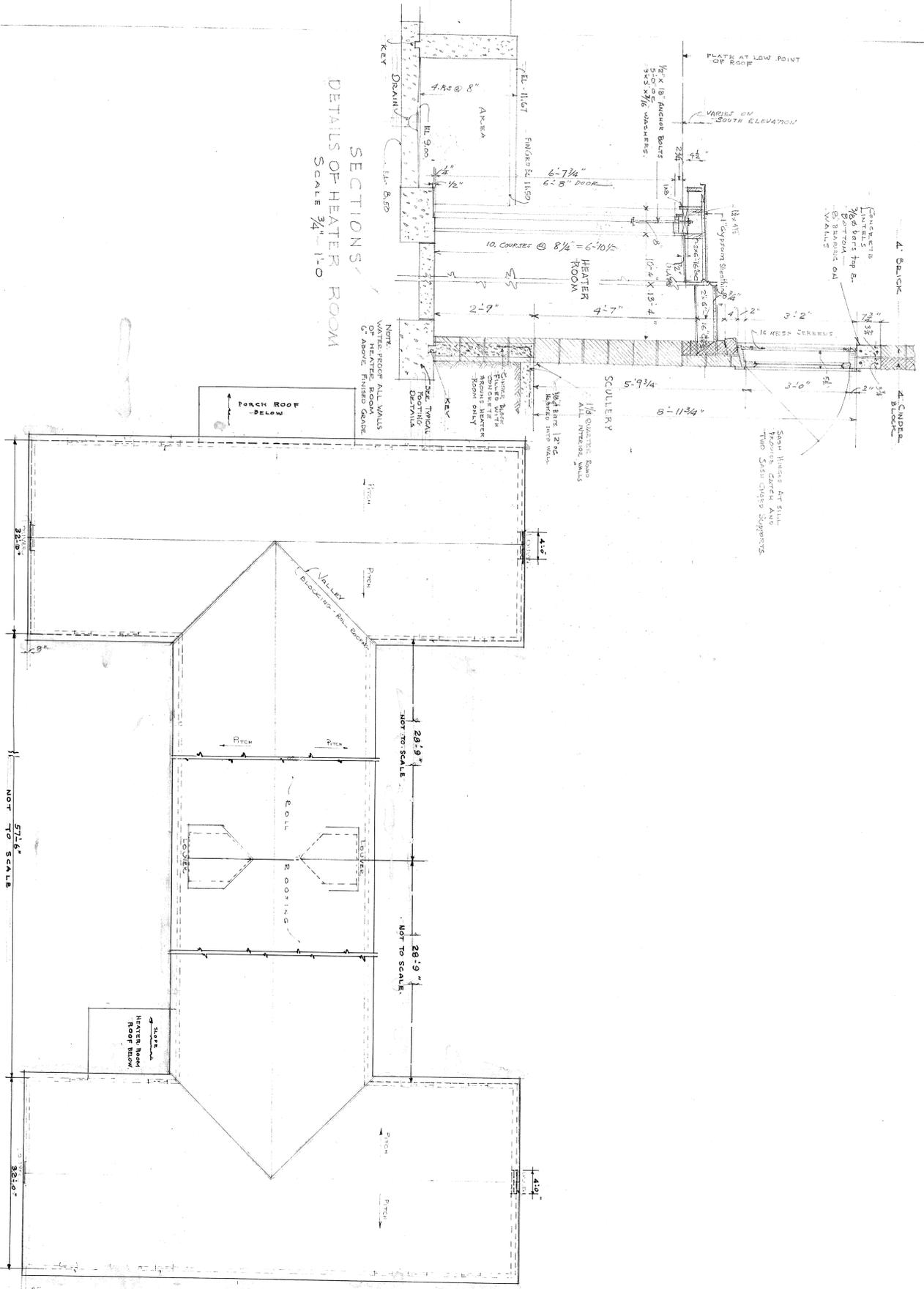
NOTE:
ALL OTHER STEPS SIMILAR BUT
NUMBER OF RISERS TO SUIT
DIMENSIONS IN EACH CASE

RECORD DRAWING
SHEET 1/2 OF 47
SEE LETTER NOV 77 50 DATED 2/19/46
SHEET 1/2 OF 47

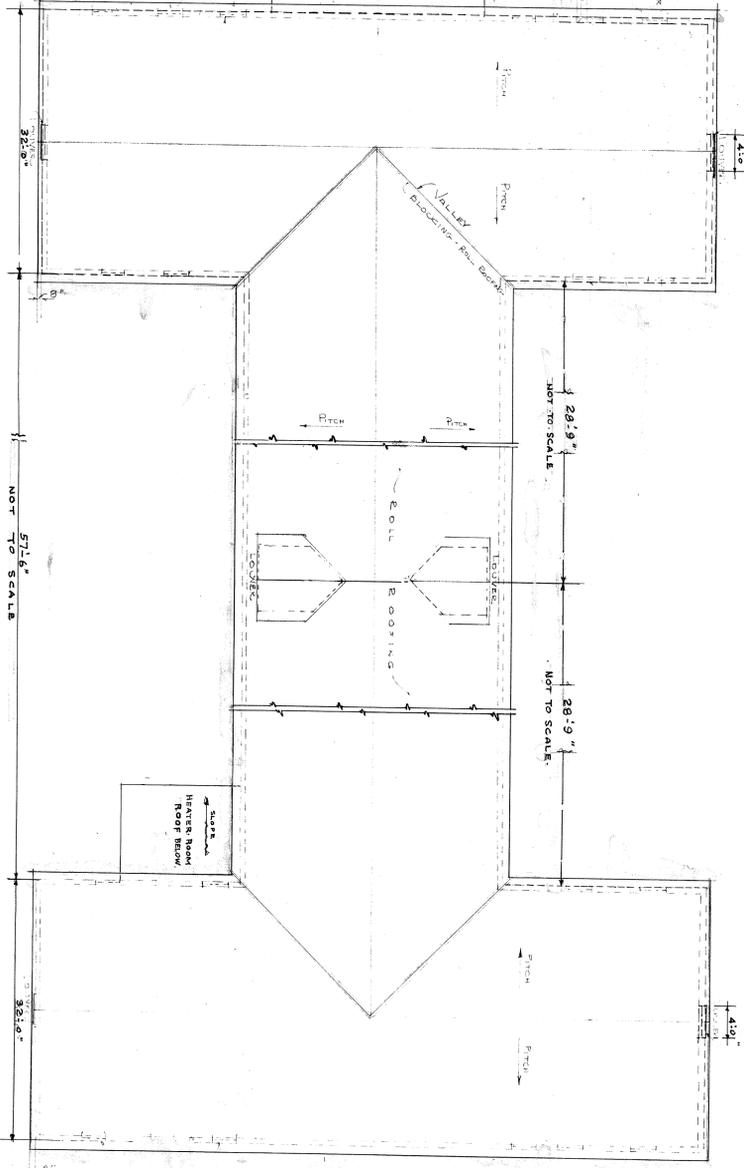
DESIGNED BY	PROJ. NO.	DATE
CHECKED BY	285 723	1943
APPROVED		
FOR CHIEF OF BUREAU		
DRAWN BY		
TRACED BY		
CHECKED BY		
IN CHARGE		
Sheet 4 of 18 Drawing No. 12549		
APPROVED NOVEMBER 22 1943		
304 209		

**BACHELOR OFFICERS
MESS HALL
ELEVATIONS**

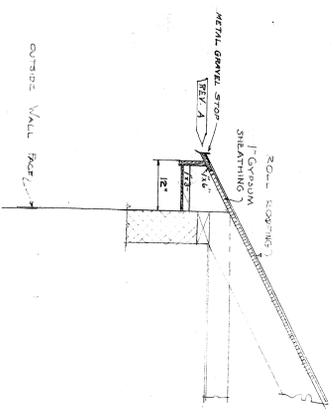
SECTIONS
DETAILS OF HEATER ROOM
SCALE 3/4" = 1'-0"



ROOF PLAN
SCALE 1/8" = 1'-0"



DETAIL OF EAVES
SEE LETTER NOV 27 1942



RECORD DRAWING
SHEET 14 OF 47

SEE LETTER NOV 27 1942 DATED 2/1/44

REVISION	DATE	BY	REASON
1	1/14/44	W.F.L.	REVISIONS TO DRAWING
2	1/14/44	W.F.L.	REVISIONS TO DRAWING
3	1/14/44	W.F.L.	REVISIONS TO DRAWING
4	1/14/44	W.F.L.	REVISIONS TO DRAWING
5	1/14/44	W.F.L.	REVISIONS TO DRAWING
6	1/14/44	W.F.L.	REVISIONS TO DRAWING
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99	1/14/44	W.F.L.	REVISIONS TO DRAWING
100	1/14/44	W.F.L.	REVISIONS TO DRAWING

MAINE SAFFRACKS QUANTICO VA
U.S.M.C. AIR STATION
FORNEX
CHIEF ENGINEER
IN CHARGE

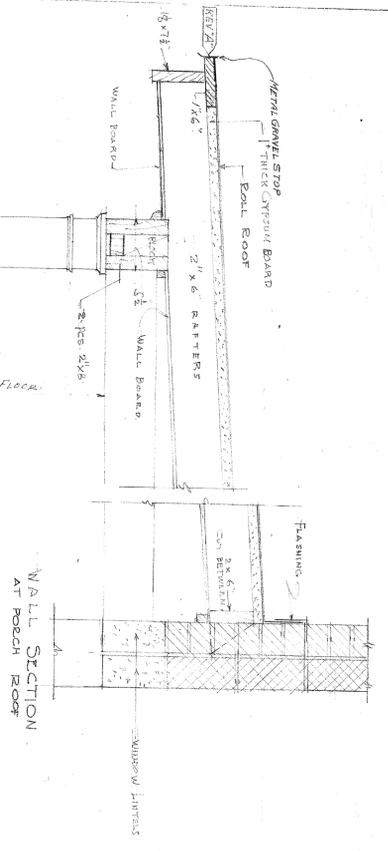
BACHELOR OFFICERS
MESS HALL

ROOF PLAN

SCALE AS NOTED

1827

APPROVED NOVEMBER 28 1942
DATE NOV 21 1942
BY W.F.L.

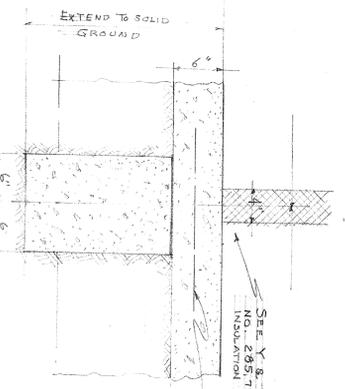
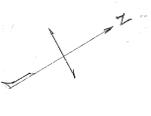


WALL SECTION AT PORCH ROOF

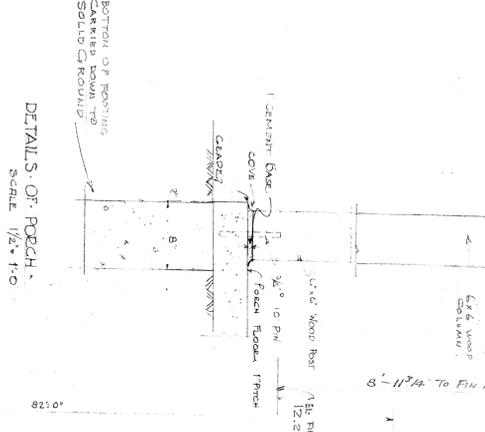
1/2" = 6" NOT TO SCALE

SECTION B-B

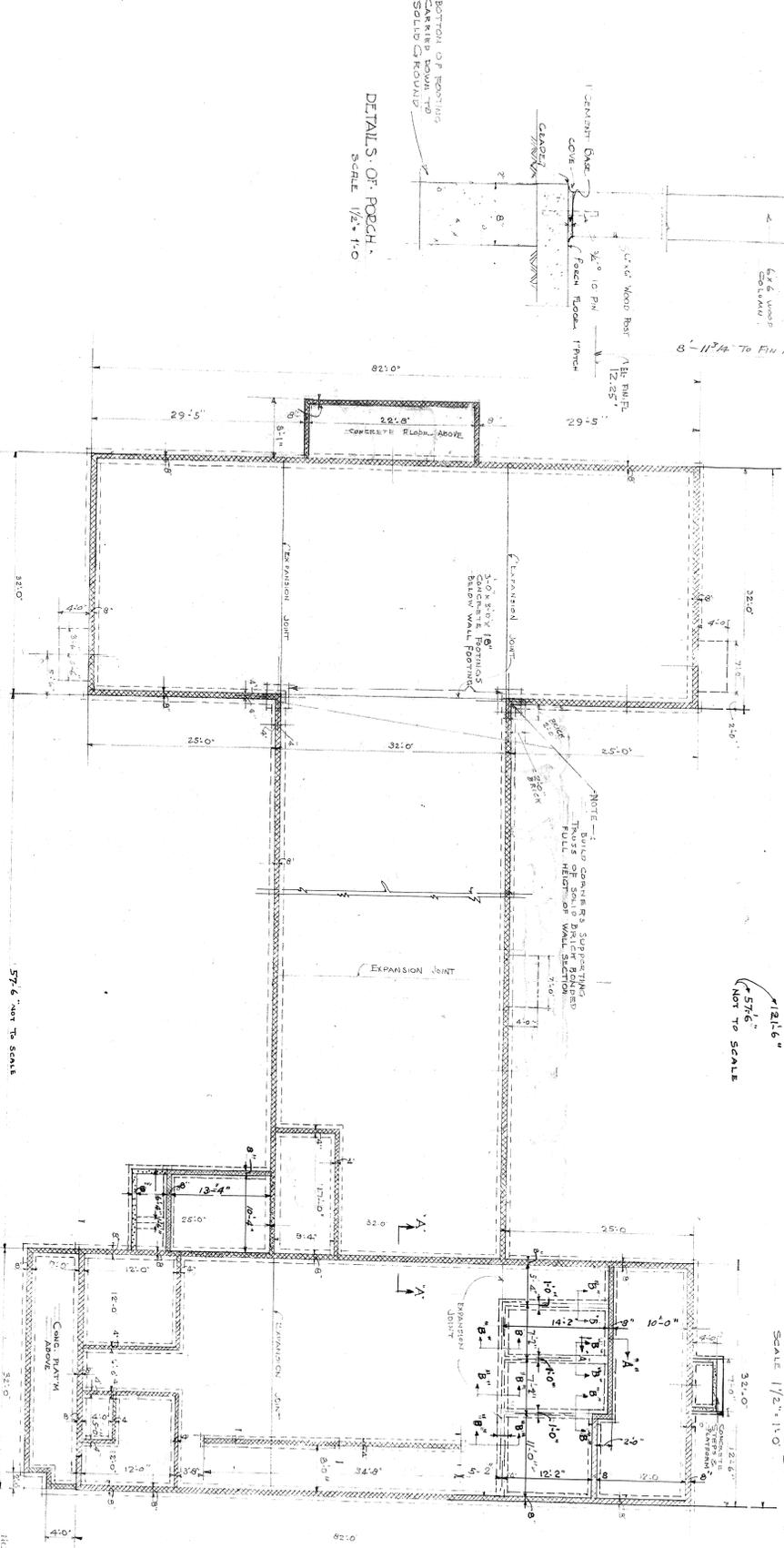
SCALE 1/2" = 1'-0"



SEE Y. & D. DRAWING NO. 285,724 FOR INSULATION OF WALLS, ETC.
 PROVIDE 2.0" WIDE REINFORCING MESH REPAIR TO WALLS (FULL LENGTH OF WALL).

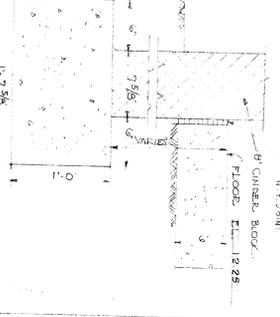


DETAIL S. OF PORCH - SCALE 1/2" = 1'-0"

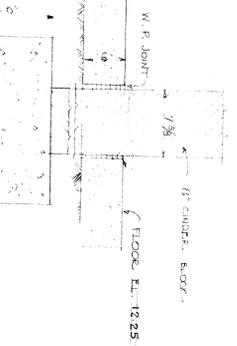


FOUNDATION PLAN - SCALE 1/2" = 1'-0"

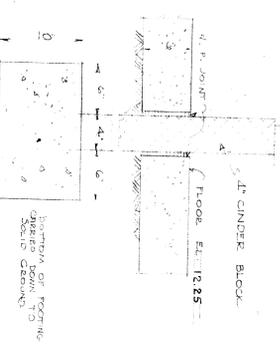
SEE ELEVATION SECTIONS FOR DIMENSIONS OF EXTERIOR WALL FOOTINGS. SPREAD DOWN TO SOLID GROUND.



SECTION A-A - SCALE 1 1/2" = 1'-0"



TYPICAL INTERIOR FOOTING FOR 4\"/>



SECTION B-B

TYPICAL EXTERIOR WALL FOOTINGS

DESIGNED BY: MARINE BARBARA'S QUANTICO VA.
 CHECKED BY: J. TURNER
 IN CHARGE: 285,720

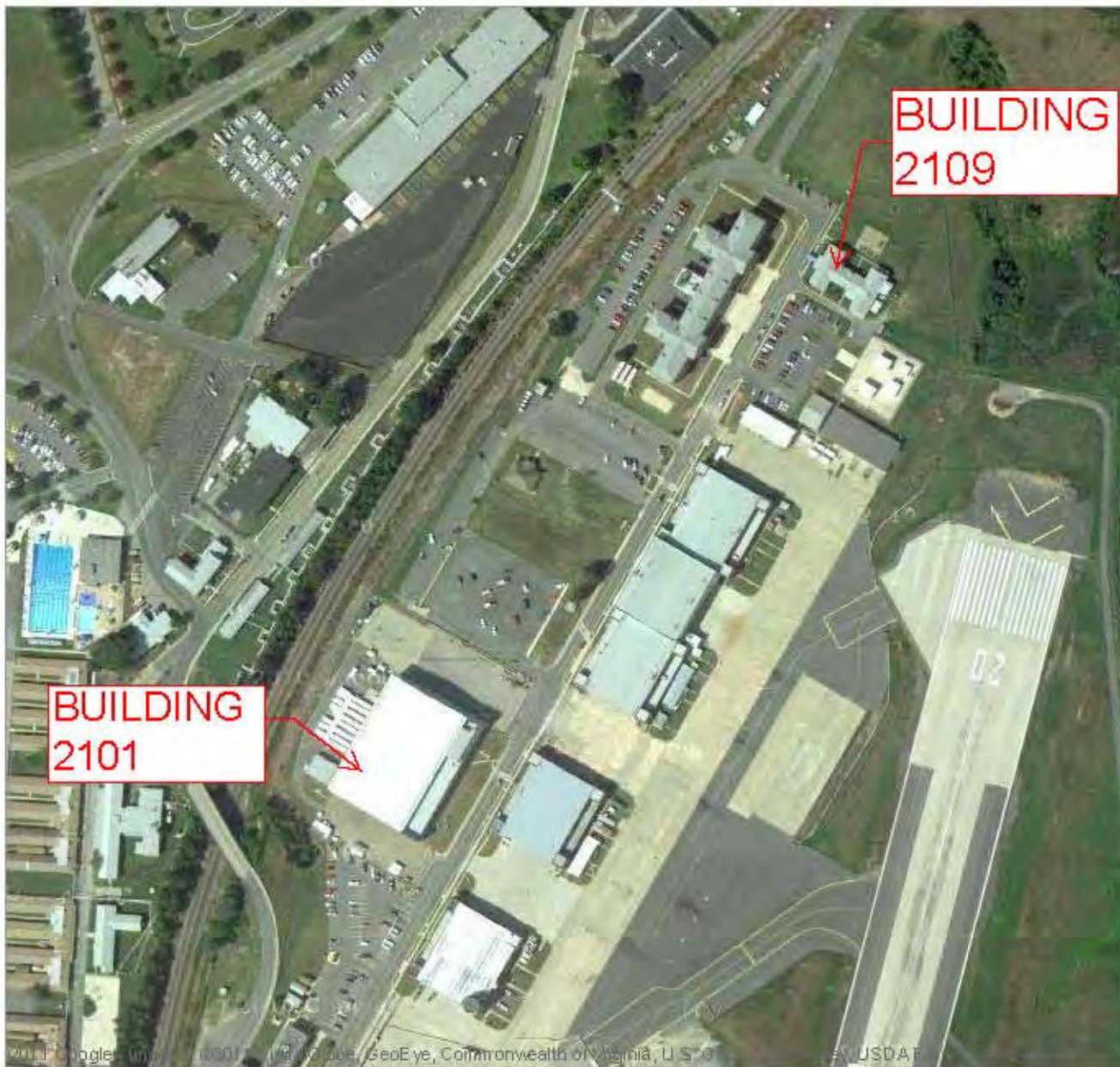
BACHELOR OFFICERS MESS HALL FOUNDATION PLAN

RECORD DRAWING SHEET OF 47
 SEE LETTER NOV 7 1940 DATED 4/14/42

SCALE AS NOTED

1825

APPROVED NOVEMBER 25, 1943
 PUBLIC WORKS OFFICE



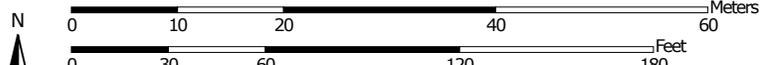
Photos

Appendix B
Soil Maps

Soil Map—Prince William County, Virginia



Map Scale: 1:709 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Prince William County, Virginia
 Survey Area Data: Version 12, Dec 13, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

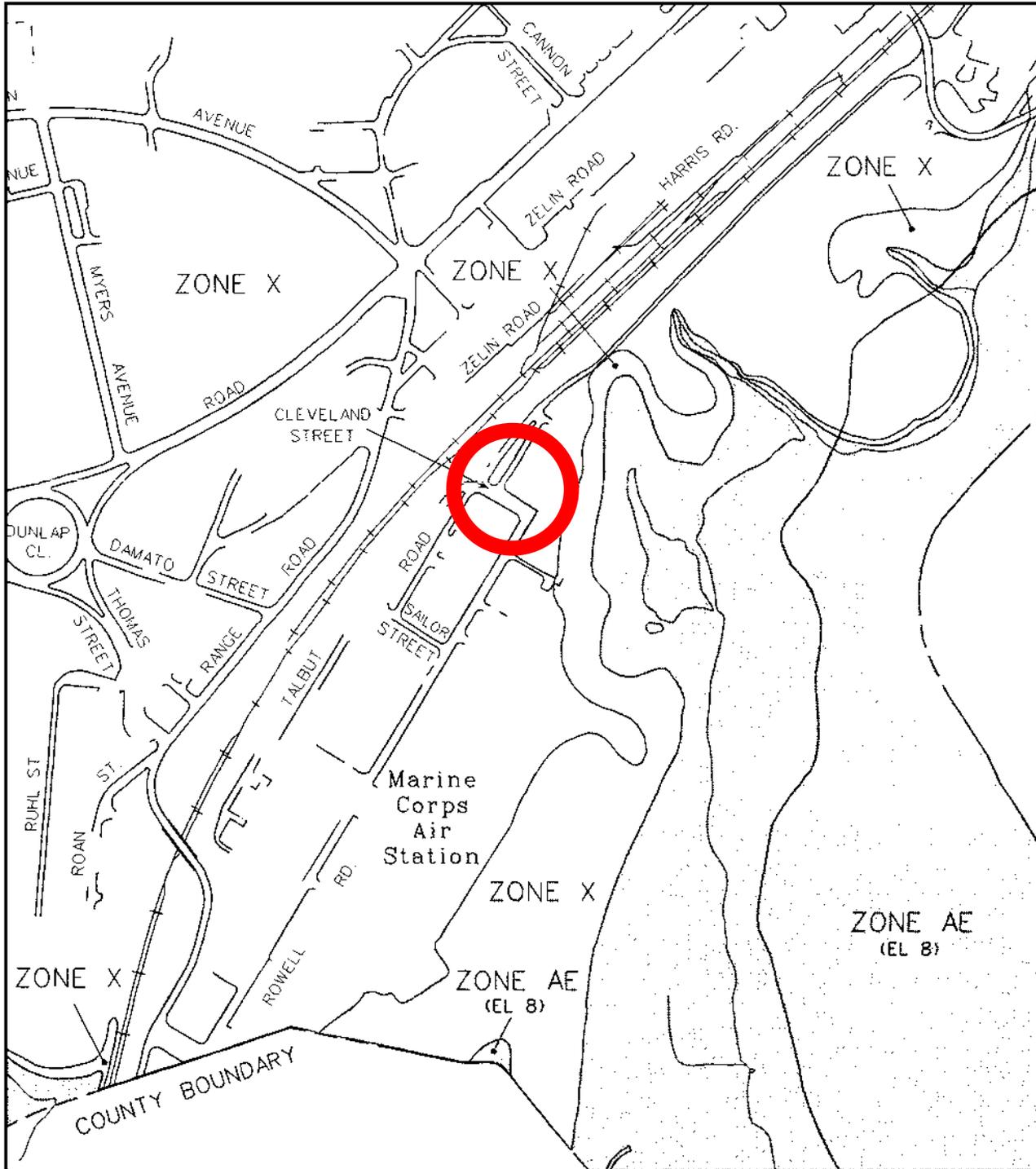
Date(s) aerial images were photographed: Apr 14, 2011—Nov 7, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Prince William County, Virginia (VA153)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cw	Cut and fill land	2.6	100.0%
Totals for Area of Interest		2.6	100.0%

Appendix C
FEMA FIRMS



APPROXIMATE SCALE

500 0 500 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
PRINCE WILLIAM COUNTY,
VIRGINIA
AND INCORPORATED AREAS

PANEL 318 OF 330

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GLANZON TOWN OF	285	5	
UNINCORPORATED AREAS	286	58	D

Reference to this map does not constitute a contract. It is for informational purposes only. When placing map orders, the COMMUNITY NAME(S) shown above should be used on invoice applications for the subject community.

MAP NUMBER
51153C0318 D

EFFECTIVE DATE:
JANUARY 5, 1995



Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

Appendix D

Draft Memorandum of Agreement Between the Virginia State
Historic Preservation Officer and the United States Marine Corps
Regarding Demolition of Building 2109, Marine Corps Base
Quantico, Virginia

MEMORANDUM OF AGREEMENT
BETWEEN THE UNITED STATES MARINE CORPS
AND THE VIRGINIA STATE HISTORIC PRESERVATION OFFICER
REGARDING
THE DEMOLITION OF BUILDING 2109
MARINE CORPS BASE QUANTICO, VIRGINIA

WHEREAS, the United States Marine Corps (USMC) has identified in its report "AICUZ Study Update, Air Installations Compatible Use Zones Study, Marine Corps Air Facility Quantico, Virginia" (November 2009) Building 2109 as an airfield obstruction; and

WHEREAS, the USMC proposes to demolish Building 2109 in order to improve the safety of air operations at Marine Corps Air Facility Quantico, hereafter "Undertaking" (Department of Historic Resources (hereafter, "DHR") Project No. 2013-3175); and

WHEREAS, the USMC has consulted with State Historic Preservation Office, hereafter "SHPO", pursuant to 36 C.F.R Part 800 regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. Part 470f); and

WHEREAS, the USMC, in consultation with the SHPO, has defined the Undertaking's Area of Potential Effects, hereafter "APE", as shown in Attachment A; and

WHEREAS, Building 2109 is contributing to the Marine Corps Base Quantico Historic District (DHR Inventory No. 287-0010) a property eligible for listing in the National Register of Historic Places, hereafter "NRHP"; and

WHEREAS, the USMC in consultation with the SHPO, has determined that the Undertaking will have an adverse effect on the Marine Corps Base Quantico Historic District; and

WHEREAS, the USMC, in accordance with 36 C.F.R. Part 800.6(a)(1), will notify the Advisory Council on Historic Preservation, thereafter "ACHP", of the adverse effect and provide the ACHP the opportunity to participate in development of this Memorandum of Agreement, hereafter "Agreement"; and

Enclosure (1)

WHEREAS, pursuant to 36 C.F.R. Part 800.2(c) (3), the USMC invited Prince William County, Fauquier County, and Stafford County to consult on this Undertaking; and

WHEREAS, public involvement for this Undertaking is offered through consultation letters that will be mailed to the county and Marine Corps Base Quantico, hereafter "MCBQ", web site posting for the public to comment on the Undertaking; and

WHEREAS, the USMC shall file an executed copy of this Agreement with the ACHP pursuant to 36 C.F.R. Part 800.6(b) (1) (IV)

NOW, THEREFORE, the USMC and the SHPO agree that the Undertaking shall be implemented in accordance with the following stipulations in order to take into account its effect on historic properties.

Stipulations

The USMC shall ensure that the following measures are carried out:

I. Documentation and Mitigation

Within two (2) years of the execution of this Agreement, the USMC shall document Building 2109 using SHPO's Intensive Level Inventory forms and enter the information into the SHPO's Virginia Cultural Resources Inventory System, hereafter "V-CRIS". This document will include, but is not limited to, a narrative, which includes a brief history placing Building 2109 in its historic context within Marine Corps Air Facility, hereafter "MCAF". Also included;

A. Drawings: For Building 2109, the USMC shall provide to the SHPO documents meeting Documentation Level II of "Secretary of Interior's Standards and Guidelines for Architectural and Engineering Documentation: Historic American Building Survey/Historic Engineering Record (HABS/HAER) Standards."

B. Digital Photographs: Black and White large format photographs of exterior elevations and any significant exterior or interior architectural features, and important interior spaces of Building 2109. The photo-documentation shall be consistent with the SHPO's "Photographic Documentation for Virginia Department of Historic Resources (DHR) Survey" (updated July 2009).

Enclosure (1)

C. Clean photocopies of historic photographs and design drawings if available.

D. The Undertaking shall not occur until the SHPO has accepted the documentation. If SHPO does not respond within thirty (30) days of receipt of a complete documentation package the USMC may assume acceptance.

II. Professional Qualifications

All architectural work carried out pursuant to this Agreement shall be conducted by or under the direct supervision of an individual or individuals who meets, at minimum, the Secretary of the Interior Professional Qualifications Standards (48 FR 44738-9, September 29, 1983) in the appropriate discipline.

III. Preparation and Review of Documents

A. Except as otherwise stated elsewhere in the stipulations, the USMC shall submit a draft of all documentation materials to the SHPO and to other consulting parties for 30-day review and comment. The USMC shall address all comments received within thirty (30) days of confirmed receipt in the revised documentation. Following written acceptance by the SHPO, the USMC shall provide two (2) copies of all final reports, bound and on acid-free paper, and one electronic copy in Adobe® Portable Document Format (.pdf) to the SHPO and one (1) copy (.pdf or hardcopy) to other consulting parties.

B. All technical reports prepared pursuant to this Agreement will be consistent with the federal standards titled *Archeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines* (48 FR 44716 September 29, 1983), *Guidelines for Preparing Identification and Evaluation Reports for Submission Pursuant to Sections 106 and 110, National Historic Preservation Act*, and *SHPO's Guidelines for Conducting Historic Resources Survey in Virginia* (2011), or any subsequent revisions or replacements of these documents.

C. The SHPO and other consulting parties agree to provide comments on all documentation arising from this Agreement within thirty (30) calendar days of receipt. If no comments are received from the SHPO or other consulting parties within the thirty (30) day review period, the USMC may assume the non-responding party has no comments.

Enclosure (1)

IV. Unanticipated Discoveries

A. In the event that a previously unidentified archaeological resource is discovered during ground-disturbing activities associated with implementation of the Undertaking, the USMC shall require the contractor to halt all demolition work involving subsurface disturbance in the area of the resource and in surrounding areas where additional subsurface remains can reasonably be expected to occur. Work in all other areas of the Undertaking may continue.

B. The USMC shall notify the SHPO within two (2) working days of the discovery. In the case of prehistoric or historic Native American sites, the USMC shall also notify appropriate Federal Indian tribes and Indian tribes recognized by the Commonwealth of Virginia (hereinafter "Virginia Indian tribes") within two (2) working days of the discovery.

C. The USMC shall ensure that an archaeologist meeting the Secretary of the Interior's *Professional Qualifications Standards* (48 FR 44739) investigates the work site and the resource, and then the USMC, the SHPO, appropriate Virginia Indian tribes, and any federally-recognized Indian tribes with an interest in the area an assessment of the NRHP eligibility of the resource (36 C.F.R. 60.4) and proposed treatment actions to resolve any adverse effects on the resource. The SHPO, Virginia Indian tribes, and federal tribes shall respond within five (5) working days of receipt of the USMC's assessment of NRHP eligibility of the resource and proposed action plan. The USMC shall take into account the recommendations of the SHPO, Virginia Indian tribes, and federal tribes regarding NRHP eligibility of the resource and the proposed action plan, and then carry out appropriate actions.

D. The USMC shall ensure that construction work within the affected area does not proceed until appropriate treatment measures are developed and implemented or the determination is made that the located resource is not eligible for inclusion on the NRHP.

V. Treatment of Human Remains

A. The USMC shall make all reasonable efforts to avoid disturbing gravesites, including those containing Native American human remains and associated funerary artifacts. The USMC shall treat all such gravesites in a manner consistent with

Enclosure (1)

the ACHP "Policy Statement Regarding Treatment of Burial Sites, Human Remains and Funerary Objects" (February 23, 2007; <http://www.achp.gov/docs/hrpolicy0207.pdf>).

B. Human remains and associated funerary objects encountered during the course of actions taken as a result of this Agreement shall be treated in a manner consistent with the provisions of the Virginia Antiquities Act, Section 10.1-2305 of the *Code of Virginia* and its implementing regulations, 17 VAC5-20, adopted by the Virginia Board of Historic Resources and published in the Virginia Register on July 15, 1991, and the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001) and its implementing regulations, 36 C.F.R. Part 10. In accordance with the regulations stated above, the USMC may obtain a permit from the SHPO for the archaeological removal of human remains should removal be necessary.

C. In the event that the human remains encountered are likely to be of Native American origin, whether prehistoric or historic, the USMC shall immediately notify any federally recognized Indian tribes with interest in the area. The USMC shall immediately notify the appropriate Virginia Indian tribes. The USMC shall determine the treatment of Native American human remains and associated funerary objects in consultation with the appropriate Virginia Indian tribes. The USMC shall also consult with any federally-recognized Indian tribes with interest in the area. The USMC shall make all reasonable efforts to ensure that the general public is excluded from viewing any Native American gravesites and associated funerary objects. The signatories and the concurring parties to this Agreement shall release no photographs of any Native American gravesites or associated funerary objects to the press or to the general public.

VI. Dispute Resolution

A. Should any party to this Agreement object in writing to any action carried out or proposed by the USMC or with respect to the implementation of this Agreement, the USMC shall consult with the objecting party to attempt to resolve the objection. If the USMC determines it cannot resolve the objection, the USMC shall forward to the ACHP all relevant documentation and a recommended course of action. Within thirty (30) days after receipt of documentation, the ACHP will either:

1. Provide the USMC with recommendations, which the USMC will take into account in reaching a final decision regarding the dispute; or

Enclosure (1)

2. Notify the USMC that it will or will not comment.

B. Pursuant to 35 C.F.R. Part 800.7(c), the USMC will take into account any comment the ACHP provides in response to such request in accordance with 36 C.F.R. Part 800.7(c)(4) with reference to the subject dispute.

C. At any time during implementation of the measures stipulated in this Agreement, should a member of the public object to the USMC regarding the manner in which the measures stipulated in the Agreement are being implemented, the USMC shall notify the SHPO and consult with the objector to attempt to resolve the objection. The SHPO may request that the USMC notify the ACHP about the objection as well.

VIII. Amendments and Termination

A. Any signatory may amend or terminate this Agreement by notifying all other parties to this Agreement, explaining the reasons for amendment or termination and affording the parties at least thirty (30) days to consult and agree on the amendment and/or seek alternatives to the termination.

B. Should the SHPO or other consulting party object within thirty (30) days to any actions proposed pursuant to this Agreement, the USMC shall request the further comments of the ACHP pursuant to 36 C.F.R. Part 800.7. Any ACHP comment provided in response to such a request will be taken into account by the USMC in accordance with 36 C.F.R. Part 800.7 (c) (4).

C. In the event that this Agreement is terminated or rendered null and void, the USMC shall submit to the SHPO a technical report on the results of any archaeological investigations conducted prior to and including the date of termination, and shall ensure that any associated collections and records recovered from USMC property are curated in accordance with 36 C.F.R. 79, *Curation of Federally Owned and Administered Archeological Collections*.

D. In the event of termination, the USMC shall either execute a memorandum of agreement with signatories under 36 C.F.R. Part 800.6(c) (1) or request the comments of the ACHP under 36 C.F.R. Part 800.7(a).

Enclosure (1)

IX. Duration

This Agreement shall continue in full force and effect for five (5) years after the date of the last signatory party's signature. All obligations under this Agreement must be complete before expiration of this Agreement. If any obligation is not complete, the party responsible for such obligation is in violation of this Agreement. At any time in the six (6) month period prior to expiration of this Agreement, the USMC and SHPO can agree to extend its duration with or without amendments. No extension or modification will be effective unless all parties to the Agreement have agreed with it in writing.

X. Execution of this Agreement

This Agreement may be executed in counterparts, with a separate page for each signatory. The USMC will ensure that each party is provided with a copy of the fully executed agreement. Execution of this Agreement by the USMC and the SHPO and its submission to the ACHP in accordance with 36 C.F.R. Part 800.6(b)(1)(iv), shall, pursuant to 36 C.F.R. Part 800.6(c), be considered to be an agreement pursuant to the regulations issued by the ACHP for the purposes of Section 110(1) of the NHPA. Execution and submission of this Agreement, and implementation of its terms, are evidence that the USMC has afforded the ACHP an opportunity to comment on the proposed undertaking and its effects on historic properties and that the USMC has taken into account the effect of the undertaking on historic properties.

Enclosure (1)

UNITED STATES MARINE CORPS

By: _____ Date: _____

DAVID W. MAXWELL
COLONEL, U.S. MARINE CORPS
Commander
Marine Corps Base Quantico

VIRGINIA STATE HISTORIC PRESERVATION OFFICER

By: _____ Date: _____

JULIE V. LANGAN
Director, Department of Historic Resources

THE ADVISORY COUNCIL ON HISTORIC PRESERVATION

By: _____ Date: _____

JOHN M. FOWLER
Executive Director

Enclosure (1)

Appendix E
Emissions Calculations

PROJECTED ACTUAL EMISSIONS

CONSTRUCTION EQUIPMENT	Quantity	Usage	VOC (lbs)	CO (lbs)	NOx (lbs)	PM (lbs)	CO₂ (lbs)	SO₂ (lbs)
Cranes	1	88	14.48	36.21	260.28	14.37	24,442.66	49.43
Crawler Tractor/Dozers	1	88	20.83	61.78	166.14	18.00	16,479.04	33.33
Graders	1	8	2.93	8.23	25.32	2.50	2,545.80	5.15
Rubber Tire Loaders	1	192	45.51	135.00	363.01	39.34	36,007.11	72.82

HIGHWAY VEHICLES	Vehicle-Days	Miles/Day	VOC (lbs)	CO (lbs)	NOx (lbs)	PM (lbs)	CO₂ (lbs)	SO₂ (lbs)
Heavy Heavy Duty Tractor (Diesel)	7	60	0.15	0.83	9.68	0.20	1,495.75	0.00
Light Heavy Duty (Diesel)	92	60	2.02	9.35	59.99	0.44	6,315.84	0.00

LAND CLEARING	VOC (lbs)	CO (lbs)	NOx (lbs)	PM (lbs)	CO₂ (lbs)	SO₂ (lbs)
Total Land Clearing Operations				24.00		

TOTAL PROJECTED EMISSIONS (tons)	0.04	0.13	0.44	0.05	43.64	0.08
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Appendix F
Construction Waste Management Report

Construction Waste Management Report Quantico Marine Corps Base

Report Date: _____
 Project Number: _____ Project Name: _____
 Contract Number: _____ Contract Task Order/Delivery Order: _____
 Reporting Period: _____ to _____

SUBMIT THIS FORM BY FAX TO (703) 784-4953, OR BY EMAIL TO: Ronald King at ronald.king@usmc.mil or call (703) 432-0524

Comments: _____

Waste Stream	Disposal (Tons)	Disposal Cost	Recycled (Tons)	Recycled Cost	Recycled Revenues
C&D		\$		\$	\$

CONSTRUCTION & DEMOLITION DEBRIS (C&D).

- Record hazardous and non-hazardous C&D waste as one entry. Enter total tons of C&D disposed of in a landfill, by incineration, and/or by hazardous waste contract.
- Enter total disposal cost for C&D.
- Enter the recycled hazardous and non-hazardous C&D tons as one entry under the recycling column. You can also claim C&D diversion conducted by a construction contractor or MILCON project. If you have recycled C&D, it is likely that some was disposed of as well. Therefore, if there are recycled tons of C&D there should be some disposed tons of C&D.
- Enter the cost associated with recycling. Recycling costs include handling, processing, transportation, and other costs associated with recycling C&D. Soils that are used at another location or that are reclaimed count toward recycling.
- Enter Recycling Revenues. Enter only actual revenues received from recycling. Do not enter cost avoidance for recycling revenues.

Reported by: _____
 Company: _____ Contact: _____
 Address: _____ Title: _____
 _____ E-mail address: _____
 Telephone: _____ Fax: _____

Definitions:

Construction and Demolition (C&D) Debris. Waste derived from the construction, renovation, demolition or deconstruction of residential and commercial buildings and their infrastructure. C&D waste typically includes concrete, wood, metals, gypsum wallboard, asphalt, and roofing material.

Other Select Waste (OSW). Construction and demolition debris are the “Other Select Waste” categories for purposes of DoD metric reporting via SW module. If the Other Select Wastes are hazardous they must also be reported in the calendar year HW module.

ENVIRONMENTAL ASSESSMENT
FOR TIMBER HARVEST
FOREST COMPARTMENT 21
(TRAINING AREA 17B)
AT
MARINE CORPS BASE QUANTICO,
Stafford, Virginia

Natural Resources and Environmental Affairs Branch
Installation and Environment Division
Marine Corps Base Quantico, Virginia

July 2014

ENVIRONMENTAL ASSESSMENT
TIMBER HARVEST
FOREST COMPARTMENT 21
(TRAINING AREA 17B)

Type of statement: Environmental Assessment

Lead agency: Marine Corps Base Quantico, VA

For further
Information: Commander
NREA Branch (B 046)
Marine Corps Base
3250 Catlin Avenue
Quantico, VA 22134-5001

Mr. Ron Moyer (703) 432-6779

Date: July 2014

Abstract: This Environmental Assessment evaluates the no-action alternative and two action alternatives for forest management activities within Forest Compartment 21. Actions include timber harvesting in accordance with the Integrated Natural Resources Management Plan (INRMP), Quantico, and associated site preparation, reforestation, and forest road and trail improvements. The proposed action does not change the land usage or have any long-term, adverse effects on the environment. Proposed activities are routine forest health maintenance actions that are carefully prescribed and carried out in accordance with the Virginia Best Management Practices for Forestry. Alternative C is the preferred action.

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ENVIRONMENTAL ASSESSMENT
TIMBER HARVEST IN FOREST COMPARTMENT 21
MARINE CORPS BASE QUANTICO

1. Project Description

This Environmental Assessment has been completed to satisfy the National Environmental Policy Act requirements for a proposed timber harvest in Forest Compartment 21 (Training Area 17B), Marine Corps Base Quantico (MCBQ). The Forestry Program, Natural Resources and Environmental Affairs Branch (NREA), Installation and Environment Division, MCBQ is the action sponsor. Forest Compartment 21 is designated as "fully manageable" in the Forest Management section of the Integrated Natural Resource Management Plan (INRMP) for MCBQ, as it lies outside of live-fire munitions zones used in military training. It is being analyzed as part of a scheduled ten-year evaluation cycle. The estimated time from beginning of harvest through site preparation and regeneration is approximately two to three years from the project approval date.

2. Purpose and Need

The purpose and need for this proposed timber harvest is to:

- Provide diversified woodland training grounds for Marines over the long term.
- Improve forest health and curtail degradation of valuable timber resources
- Improve safety of woodlands for Marines and recreational users by removing unhealthy and hazardous trees.
- Manage the MCBQ forestlands as sustainable forest resources and to promote biological diversity.
- Improve habitat for wildlife on a forest-wide scale.

These outputs are accomplished primarily through carefully prescribed and administered timber harvests and related management actions. Severe degradation of trees can occur over time, particularly in forest stands without management. At MCBQ, this degradation may be more severe than privately held woodlands due to high-use impacts and more frequent fires from military training. The advanced age of much of the Virginia pine (*Pinus virginiana*) coupled with an assortment of forest insect pests and diseases add to the severity of tree degradation. Other serious weather-related impacts include tree breakage and blowdown from ice storms, tornados, severe wind,

and hurricanes.

Forest health and wildlife habitat should both be improved by the proposed forest management activities. In addition, timber held in trust by the U.S. Government, and sold on a highly regulated basis to local forest product industries, provides needed raw materials. It also contributes to the area's economic base for businesses such as sawmills, paper mills, logging, trucking, firewood processors, mulch dealers, and wood preservative companies. This has served to strengthen relationships with adjacent county governments and businesses since 1962, when managed timber harvesting began at MCBQ. Revenues to the U.S. Government derived from the sale of timber support the forest management activities at MCBQ.

3. Alternatives

Alternative A - No Action. This alternative calls for no active forest management activities or improvements to forest health, forest roads, or wildlife habitat.

Alternative B - Maximum Sustainable Harvest Level. This alternative calls for the maximum sustainable harvest acreage (328 acres) using various harvesting techniques applied to the 937 acre forest compartment on a 10-year entry basis (**see Table 1 below**).

Alternative C - Mitigated Harvest Level (see Table 1 below and Appendix A).

This alternative calls for various harvesting techniques that total 163 acres in 8 units within this 937 acre compartment. This represents a greatly reduced harvest level from the calculated maximum sustainable level of Alternative B (not mapped), giving consideration to military usage and protection of natural, physical and cultural resources. It consists of the following specifics:

- Regeneration Harvests (108 acres)
 - Pine: 47 acres (clearcut 2 units)
 - Hardwood: 61 acres (shelterwood cut 3 units)
- Thinnings or Intermediate Harvests (55 acres)
 - Pine: 55 acres (loblolly pine thin 2 units)
 - Hardwood: 0 acres
- Create a 2 acre managed opening for wildlife
- Grade and gravel approximately 3000 feet of existing trails to upgrade for logging access. Also prepare approximately six (6) log deck sites along road edges for logging trucks to stage operations.

Table 1. Forest Compartment 21 Management Alternatives

Management Category	Specific Harvest Method	Alternative B - Maximum Sustainable Harvest Level (acres/10 year entries)	Alternative C - Mitigated Harvest Level (acres/10 year entries)
Pine Regeneration	Clearcut	46	47
Pine thinning	Pine thin (loblolly)	90	55
Hardwood Regeneration	Shelterwood cut	64	61
Hardwood thinning	Hardwood selective thin/"pine-only" cuts	128	0
Total Acres Affected		328	163

4. Description of Actions

Timber harvests can be generally classified into two broad categories: **Regeneration harvests and Thinnings (or Intermediate Harvests)**. This classification is necessary to compute the "sustainable harvest level" (see Appendix B). This is useful in determining the amount of timber that can be harvested from a forest compartment in perpetuity without decline. **Regeneration harvests** are normally applied to mature stands and include the clearcut and shelterwood harvest systems, as prescribed in the MCBQ INRMP. Regeneration harvests also include the seed-tree harvest and several types of selection harvest systems, but are rarely used. Regeneration harvests are heavier cuts than thinnings, intended to initiate new timber stands. A plan for assuring the new stand's density and species composition is included in a prescription identified for each cut. These cuts typically permit more sunlight to the forest floor than thinnings, and are varied according to the species desired for the site. Clearcut harvest sites are normally planted with nursery-grown seedlings. Other regeneration harvest sites are regenerated naturally from seeds in the remaining trees, seed already on the ground, or sprouting from roots or stumps of harvested trees.

Clearcuts are regeneration harvests that require the removal of all trees from the site. The units proposed for clearcut harvest in this plan are Virginia pine stands that range from roughly 60 to 80 years old. Stands of this age of this species are considered over-mature and typically exhibit signs of stagnant growth, rot, disease and windthrow. The clearcut harvest of over-mature Virginia pine stands is considered the only practical means of regeneration, given this tree species' characteristic habit of uprooting with lesser treatments.

Shelterwood harvests are regeneration harvests typically applied to the more shade-tolerant hardwood stands. The simplest form of shelterwood system, the two-staged shelterwood, calls for the removal of approximately 60-70% of the tree canopy from the site

during the initial harvest. The remaining trees provide a source of seed for the natural regeneration of the site, as well as food, shelter, and cover for wildlife. They also provide a partial shade cover conducive to the more shade-tolerant species such as beech and some oaks, while inhibiting the more shade-intolerant species such as pine, yellow poplar, and sweetgum. Under this methodology, compartments would be re-examined in ten years. If regeneration were adequate upon re-examination, the remaining trees would be removed to expose the young trees to full sunlight. If regeneration is inadequate upon re-examination or if other management decisions dictate, residual trees may be retained for a period or indefinitely.

Thinnings or Intermediate Harvests are "intermediate" treatments during a stand's life cycle, generally applied on younger or middle-aged stands. They are applied to improve growing conditions within established stands. Unlike regeneration cuts, they are not applied to initiate new stands, although some patches of regeneration sometimes do occur. Different tree species and size classes are targeted for removal under various thinning regimens, depending on the condition of the stand and desired results. Thinnings typically involve removal of approximately 30-35% of the trees from the site, and can be applied several times during the life of a stand. The types of thinning prescribed in this plan include only the planted loblolly pine (*Pinus taeda*) stand thinnings. Here, rows of trees are removed to permit large logging equipment into the stand. Then between these cut rows additional trees are removed that are smaller or undesirable, such as lower quality loblolly pine, Virginia pine, or poor quality hardwoods. When the thinning is completed, the remaining trees have less competition for sunlight and nutrients resulting in a healthier, more vigorous stand.

5. Comparison of Alternatives

Alternative A - No Action. In general, the "no action alternative" would leave a less diverse forest with little age-class stratification. Older pine stands are more vulnerable to large-scale insect and disease outbreaks and windthrow. Inaction does not address the objectives identified for the forestry and wildlife management functions aboard base. Inaction would cause a deterioration of forest health, which would diminish its suitability and safety for military training operations over the long term. Forest fuel loading would continue to increase, raising the risk of more intense forest fires. No forest access road improvements would be realized

resulting in status quo access for military use and firefighting access. Also, without forest management, a valuable renewable natural resource would remain unavailable to the public.

Alternative B - Maximum Sustainable Harvest Level. This alternative calls for the maximum acreage of harvests that could be applied to the forest compartment on a 10-year entry basis. No formal proposal of cutting is presented in this plan for Alternative B. In theory, this option would provide a uniform level of timber that could be removed from a compartment over the long term without a decline in the volume or integrity of the timber resource. After stand examinations and resource concerns, this alternative was not given intensive investment of time for consideration due to the level of disturbance it would create. This would double the acreage of disturbance from that of Alternative C (328 acres vs. 163 acres). Several stands that met the criteria for thinnings were considered. These actions were thought to be only marginally effective in improving forest health conditions and at the possible expense of causing disruption to the training area and damage to the remaining trees themselves. A more balanced approach should be pursued, resulting in Alternative C.

Alternative C - Mitigated Harvest Level (see Appendix A for map). This alternative consists of two types of regeneration harvests (clearcut and shelterwood) totaling 108 acres in five (5) units and three (3) pine thinning units totaling 55 acres. It also includes the creation of a permanent managed wildlife opening inside of clearcut Unit 4. Approximately 3000 feet (just over 1/2 mile) of roads and trails would be upgraded to accommodate tractor-trailers used in logging, plus 7 deck sites. These actions are prescribed in accordance with the guidelines of the INRMP and are intended to improve long-term forest health conditions. The proposed harvest is well under the allowable harvest level that would be possible under a more intense management regimen (**see Appendix B**). This alternative meets the criteria established in the "Purpose and Need" Section of this document as well.

6. Affected Environment and Land Use

The proposed action alternative is in a heavily forested area of Marine Corps Base Quantico. The total area of the forest compartment is 937 acres. Of this, only 73 acres (8%) are currently in a permanently managed field or an open, field-like condition. The remaining 864 acres are forested, approximately 92% of the land. The terrain is gently rolling hills typical of

the Virginia Piedmont physiographic region. Elevations in the project areas range between 160 and 290 feet above sea level.

The proposed harvest units are used by military trainers for various ground maneuvers, but are not as intensively used as most other training areas. There are no live-firing surface danger zones to restrict activity.

The primary paved roads adjacent to Base lands expected to be used by logging contractors include County Road (CR) 610 (Garrisonville Rd.), CR 612 (Brent Town Rd.), CR 611 (Sowego Rd.), Fleetwood Drive, and State Route 646 (Aden Road). Base roads likely to be used include MCB 8, MCB 1, and a short section of Upshur Road. The only improved gravel roads to be used is the un-named road leading into cutting unit 2 in the center of the compartment, which is proposed for an upgrade from MCB 8 to the logging deck site. Access will be required by contractors through one of the gates at MCB 8B or to facilitate logging vehicles. This is coordinated through Range Management and Security Battalion.

Other known land use of the areas primarily includes hunting. Hunting seasons are from mid-September through late-January, plus a spring gobbler turkey-hunting season from mid-April to mid-May. Logging activity is coordinated through Range Management and typically excludes hunting from the area where logging contractors are working.

7. Environmental Consequences and Mitigation Measures

7a. Forest Resource - Forest resources would generally improve over the long term because of proposed action Alternative C (See Appendix B). The benefits include improvement and renewal of forest stands that are over-mature and have environmental and military training-caused stresses. As species composition, spacing, and age of stands are manipulated to improve growing conditions, openings in the forest canopy are created that allow more light to penetrate to the forest floor. Within a few years of the harvest, the resultant stands become well stocked with new seedlings. Growing conditions improve, enabling them to withstand many stresses over the long term. This increases the available cover and forage required by wildlife. It also improves the vegetative diversity, which is limited under the existing closed-canopy. On a landscape-wide scale, the overall age class distribution of forest stands is also improved by creating newly regenerated stands interspersed among a majority of middle-aged

and advanced-aged stands. Among the common goals of both the forestry and wildlife management emphasis at MCBQ is the promotion of diversity of species and age classes of the forest stands.

Positive impacts of the proposed pine regeneration harvests are that the health, growth rate, and species composition of stands are all improved. Windthrow of whole trees caused by compact, shallow rooting systems, and stem breakage due to a wood rotting fungi known as "red-heart" (*Phellinus pini*), are both common problems in over-mature Virginia pine stands. These conditions are evident in the pine stands proposed for harvest. Regenerating these stands with a faster growing, straighter, fire tolerant, wind-stable tree species such as loblolly pine or shortleaf pine (*Pinus echinata*) improves the forest condition, appearance, and long-term suitability for military training. Harvesting also allows for utilization of a large source of woody material that would otherwise end up on the ground. If left unmanaged, there would be a significant buildup of woody debris causing fuel loading and risk of more intense wildfires. In severe cases, ground travel would be significantly restricted.

In the hardwood regeneration harvests, the shelterwood harvest system removes most of the damaged, poorly shaped trees, and retains some of the healthiest, better-formed trees as growing stock for seed sources. These harvests will regenerate and improve growing conditions as well as composition of the hardwood stands treated. Additionally, these timber stand improvement practices are warranted to keep the stands vigorous and to minimize insect and disease problems. For example, gypsy moths (*Lymantria dispar*) caused widespread defoliation and were a serious concern at MCBQ from 1990 to 1995 and the early 2000's. These outbreaks are very possible again in the future; however, regeneration harvests of older hardwood stands with high quantities of oak trees as are prescribed in this plan are important ways to reduce the susceptibility to gypsy moth damage.

In the loblolly pine thinning harvests, the trees that remain are expected to increase growth due to the reduction of competing vegetation for the resources of sunlight, soil nutrients, and water. In the process, more of the existing understory vegetation is exposed to sunlight, increasing the growth of trees and the abundance of herbaceous vegetation until the overstory crown canopy closes again. This period of increased herbaceous growth improves habitat for many species of

wildlife. The woody logging debris left on site also increases cover for small mammals and provides perches for birds.

A negative consequence of logging is that there is frequently a degree of "skinning" damage, a peeling away of bark on low portions of the remaining trees in a shelterwood or thinning harvest. This is caused by large logging equipment used in typical modern harvest operations, usually when dragging cut trees to the deck site. This skinning damage often leads to degradation or even mortality of trees, often several years following the harvest. However, this should be minimized through appropriate contract administration. Penalty clauses in the standard contract have enforceable financial disincentives to help ensure compliance.

Under the "No Action" Alternative, the consequences are that forest health conditions would not be improved. The mature pine stands would continue to deteriorate in health and be subject to stem breakage and windthrow. The resulting stands often become tangled thickets of dead trees, diminishing access through areas for military training and game hunting. There is also an increased fuel loading and risk of more severe wildfires. If left unmanaged, stands may attract insects and diseases, which then can invade nearby healthier stands. Also the age and size classes of forest stands within the compartment would never progress towards a balanced condition, which does not meet the goals of long-term maintenance and sustainability of the forest. These forest compartments are heavily forested and in middle to older age classes. Managed, sustainable harvesting is the only practical way of diversifying age and size classes of stands and dispersing them on a forest-wide scale.

7b. Wildlife Habitat - Timber harvesting activities often disturb wildlife in and near harvest sites. For Alternative C of this assessment, where 163 acres within a 937-acre area are proposed for treatment, these temporary disturbances might be considered as relatively minor. Larger mammals, birds and winged insects would likely migrate out of the area during the harvesting activities. Less mobile or relatively immobile fauna may be lost during the tree harvesting. Since the habitat affected by the harvest activities represents a relatively small percentage (17%) of the total available habitat with similar characteristics in the area and at MCBQ as a whole, these potential wildlife losses are not expected to be severe nor irreversible.

A wildlife food plot will be created in one of the proposed

clearcut sites to improve availability of high nutrition feed for deer and other wildlife. This is an approximate 2-acre site at the southern end of unit 4. It will be de-stumped and cultivated as a long-term managed opening, increasing the needed open areas in this otherwise heavily forested area with high quality food reserves for several game species.

7c. Threatened and Endangered Species - The only known threatened or endangered species with potential to be found in the project area is the Small-whorled pogonia (SWP) (*Isotria medioloides*). Field surveys for this federally-listed "threatened" status orchid were conducted in July 2012 in Forest Compartment 21 by Angler Environmental consulting company and recertified in 2014. The survey revealed no SWP in the project area (See Appendix D). Standard procedure is that if any new SWP colonies or any other protected species are discovered during the project, they will be reported immediately to the Base Fish, Wildlife and Agronomy Section of NREA Branch for appropriate action.

7d. Soil and Water Protection - Harvesting operations are carried out under guidelines of the Virginia Department of Forestry Best Management Practices (BMPs). These regulations are specific to forestry practices and are approved by the U.S. Environmental Protection Agency to address the requirements of the Clean Water Act, as amended. These BMPs are incorporated by reference and through various contract clauses dealing with soil and water protection. They are enforceable under timber sale contracts administered by the Resident Officer in Charge of Construction (ROICC). The contract inspection representative within the NREA Branch Forestry Program monitors the logging contractor closely to ensure compliance.

Among the most important contract clauses is that which specifies skid trail gradients to not be steeper than 15 percent, with the exception of short segments where necessary. In addition, to stabilize the soil, steep portions of skid trails and any deck site not being replanted to trees will be seeded to grass. Practices will be used to prevent concentrated water flow. Skidding of logs will be curtailed if the soils become heavily saturated. Waterbars will be properly installed where required. Grass seed will be applied to trail portions exceeding 10 percent slope. Deck sites will not be located in or near streamside management zones. All trash will be removed, and deck site logging debris will be piled, burned, or mulched. Deck sites will also be reshaped upon retirement.

Other pollution prevention measures enforced by contractual requirements include regulations on spill prevention and emergency response to accidental spills. The contract also has language stating that routine servicing of equipment shall be done in such a way that waste oil/hydraulic fluid is drained into containers and properly disposed.

7e. Air Quality - The action alternative is not expected to significantly affect air quality at MCB Quantico or the Metropolitan Washington air pollution protection zone. Some short-term emissions from mobile sources associated with forest trail maintenance, timber harvesting activities, and tractor-trailers hauling timber are expected, but are considered temporary and relatively minor. No new, permanent fuel burning sources will be installed as part of this action. Prescribed burning will be done on some units as part of site preparation after harvesting is complete. Burning will be compliant with the Smoke Management Plan. Prescribed burning is authorized as a management tool (Marine Corps Order P5090.2A Chapter 11) to attain goals and objectives of the INRMP and to support other Marine Corps mission needs. It is further authorized and documented in an annual Prescribed Burn Plan. This plan is implemented under tightly prescribed weather conditions. If an air pollution alert is issued, no burning will be conducted.

7f. Recreational Values - Wildlife habitat and diversity should improve over the long term, resulting in greater opportunities for viewing wildlife or taking deer and other game by hunters. Noise impacts from chainsaws and logging equipment may conflict with the hunting experience during the days logging is conducted. However, logging activity occurs within specific harvest units and usually only affects one of the numerous training areas at any time. This is considered a relatively short-term inconvenience to these recreational users and should result in greater opportunities for quality hunting experiences in the future.

7g. Visual and Noise Impacts - Five of the eight proposed harvest units under Alternative C are visible from a primary Base road, including one clearcut site (unit 5). Most are thinnings and are not expected to cause a negative visual impact from roadsides. One of the hardwood shelterwood harvests (unit 1) will have a buffer of trees approximately 200 feet wide left undisturbed along MCB 8 for visual purposes, among others. The remaining units are more interior from roadways and are therefore visible to very few. The visual impacts to those hunting, training, or otherwise using the areas are of

relatively short duration of the life of the stand, two to four years, while new growth dominates the sites.

Clearcuts applied to large areas that dominate a landscape or scenic vista, particularly in heavily trafficked areas, often are considered to be a threat to aesthetics. This is not the case under this project. The clearcut sizes at MCBQ are small compared to most commercial forestry operations, averaging 23 acres for the two units proposed for harvest in Alternative C. This relatively small size has historically preserved the appearance after clearcuts.

The visual impacts of the thinnings and shelterwood harvests are expected to be more favorable. The thinning sites retain the majority of the trees, typically 65-70%, which is generally more acceptable to the public. The proposed hardwood shelterwood harvests have a more pronounced visual impact than thinnings, leaving approximately 35-40% of the stand to grow. However, the remaining trees typically are of good quality and medium to large specimens. With the usual rapid regeneration of the area, the visual impacts should soon be restored or improved over that of the pre-cut stage.

Additionally, the initial visual impacts of logging are somewhat offset by the site preparation work applied to harvested sites. There is also a very rapid rate of tree establishment and growth in this region. The clearcut site woody debris, called "slash", will be piled and burned, then the areas are planted to fast growing pine seedlings. These seedlings, along with other native volunteer trees, shrubs, and grasses, completely cover the site within a year or two. Deck site restoration work, skid trail maintenance, and slash treatment all help ensure that the aesthetic appeal of the sites is preserved. Contract clauses and oversight authority is in place to help minimize tree-skinning damage that is aesthetically unpleasant, as well as harmful to remaining trees.

Trees often buffer noise transmitting from the training areas (range noise) within the Guadalcanal (Western) portion of the base. A forested buffer will be maintained along the edge of the MCBQ boundary and Alternative C is not expected to have a significant noise impact on the adjacent communities.

7h. Cultural/Historical Resources - There are several cultural resources, such as old homesites or small gravesites, identified in the project area under previous surveys. These sites have been mapped and flagged and will be protected from

disturbance. Further, a cultural resources survey was conducted by contractors and the MCBQ Cultural Resources Manager to assess the "area of potential effect" (APE). Sites identified as eligible or potentially eligible for the National Register of Historic Places have been properly identified on maps and on the ground. Loggers and other personnel will be restricted from ground disturbing activities within the APE. Any evidence of potential cultural resources discovered during the project layout and implementation will be reported to the NEPA Program, NREA Branch. The non-adverse effect of Alternative C will be reported to the State Historic Preservation Officer per a Programmatic Agreement. See Appendix E for Cultural Resources mapping.

7i. Military Training Environment - Comments were solicited from The Basic School (S-3 Office) and Range Management Branch to address concerns from a military training standpoint. No objections to Alternative C were raised through scoping. As normal practice, access for logging will be coordinated closely with the Range Management Branch. Scheduling and daily contacts with Range Management are also routine actions.

The proposed harvesting is part of managing Base forestlands over the long term for multiple uses. The primary land use by far is military training, but also includes land management for renewable forest resources, recreation, and other valued attributes. The action sponsors believe the timber harvesting will enhance training grounds over the long term by improving forest health and creating widely varied vegetative conditions for land navigation and other training. Well-dispersed harvest units create a mosaic of size and age classes of forest stands that provide Marine trainers with an array of forest types of varying stand sizes, shapes, and vegetative densities. This provides realistic conditions for training that resembles those encountered anywhere in the world where logging is conducted. This is also the best way to prevent forest health problems and the safety factors associated with forest decay.

8. Cumulative Impacts

A cumulative impact is defined as the impact on the environment that results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions. Impacts can result from individually minor but collectively significant actions taking place over a period of time. Very few past, present, or future projects are expected near TA 17B. Tree removal has recently occurred to the north of

TA 17B for the Camp Upshur Wastewater Treatment Plant. This tree removal is not contiguous with what is proposed under Alternative C. No significant cumulative impacts would occur. The proposed actions are not likely to cause cumulative impact on soils, water resources, air quality, traffic, cultural resources or threatened or endangered species within the Base or surrounding communities. The action alternative is not expected to have cumulative impacts on military training or recreational opportunities over the long term. The logging and follow-up site preparation and reforestation activities are expected to take between two and three years from the date of approval.

9. Environmental Justice

Implementing any of the proposed actions would not be expected to significantly affect the socio-economics or create disproportionately high and adverse human health or environmental effects to children, minority, or low-income populations at MCBQ or in the surrounding area. Logging operations have temporary positive impacts within the local economy through contracting actions.

10. Conclusion

Alternative A, the "no action" alternative, does not address the proper stewardship of the forest resource described in the Purpose and Need section of this plan (page 1). Alternative B maximizes the sustainable yield of forest resources; but impacts a much greater amount of land than Alternative C. This may cause greater disruptions to wildlife and larger, more rapid changes to the military training grounds that could greatly increase the potential for negative impacts on the military training exercises. It might also affect the visual, soil and water, and cultural resources of the site. The action sponsors view Alternative C as the alternative that best satisfies the conditions and strategies of the INRMP. It does so with minimal impact to the environment and in consideration of the primary land use, military training, and the natural and cultural resources of the areas. Alternative C would not result in significant impacts to the human environment and preparation of an Environmental Impact Statement is not applicable.

11. Persons or Agencies Contacted

A general scoping meeting was held on 19 June 2012 to discuss issues of the proposed actions. Written comments were also requested from those who were invited but did not attend the

meeting. The list of those contacted for comment is contained in Appendix C. No objections to the project were received over the proposal. However, several recommendations to improve the plan were considered and incorporated into Alternative C.

12. Preparer and Reviewers

Prepared By:

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Tim Stamps, Head, Natural Resources Section, Natural Resources and Environmental Affairs Branch, Installation and Environment Division, MCBQ. Phone: (703) 432-6774

William R. Cross (Retired), Head, Forestry Section, Natural Resources and Environmental Affairs Branch, Installation and Environment Division, MCBQ.

Heather McDuff, Head, NEPA Program, Natural Resources and Environmental Affairs Branch, Installation and Environment Division, MCBQ. Phone: (703) 432-6771

Kate Roberts, Cultural Resources Manager, NEPA Program, Natural Resources and Environmental Affairs Branch, Installation and Environment Division, MCBQ. Phone: (703) 432-6781

Christa Nye, NEPA Program, Natural Resources and

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Division, MCBQ. Phone: (703) 432-6770

APPENDIX A

Compartment 21, Alternative C Map

Forest Management Proposal Forest Compartment 21 (TA 17B)

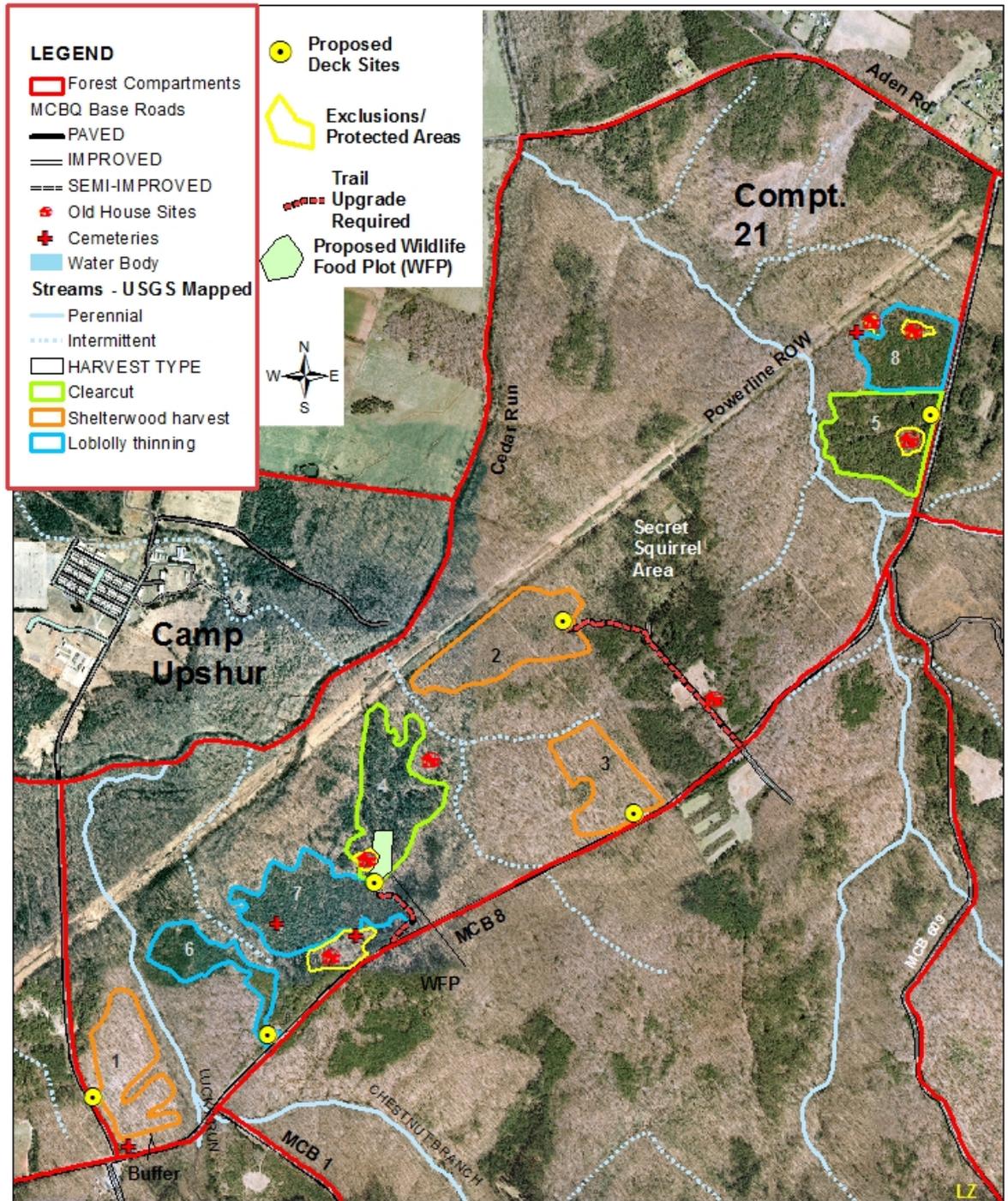


Figure 2

APPENDIX B

Compartment 21 Data & Harvest Calculations and
Compartment 21 H Prescriptions - Alt. C

Table 1. Forest Compartment 21 General Data and Sustainable Harvest Calculations

A. Forest Compartment 21 Acreage:

- Forested ----- 864 acres (92%)
- Non-forested----- 73 acres (8%)
- Total compartment- 937 acres (100%)

B. Forested Acreage Distribution:

		<u>Percentage of Forested Acreage</u>
- Pine (SAF Types 79, 81)	194 acres	22%
- Mixed Pine/Hardwood (SAF Types 78)	84 acres	10%
- Upland Hardwood (SAF 52, 59)	408 acres	47%
- Bottomland Hardwood (SAF 87, 92, 94,108)	<u>178 acres</u>	<u>21%</u>
	864 acres	100%

C. Maximum Sustainable Regeneration Harvest Calculations:

Pine: a 10-year compartment entry cycle with a 50-year rotation age for pine equals a 20% maximum sustainable harvest (10/50):

$$194 \text{ acres pine} \times 20\% = \mathbf{40 \text{ acres pine every 10 years}}$$

Hardwood: a 10-year compartment entry cycle with a 100-year rotation age for hardwoods equals a 10% maximum sustainable harvest level:

$$586 \text{ acres hardwood} \times 10\% = \mathbf{59 \text{ acres of hardwood every 10 years}}$$

Mixed Pine/Hardwood: these stands can be managed three ways over the long term: as pine stands, as hardwood, or remain mixed pine-hardwood. The decision is based on their current composition. Stands with 60% or greater composition of hardwood will generally be managed as hardwood; stands with roughly even amount of pine-hardwood (between 41% and 59% of either pine or hardwood) will remain as mixed stands and; stands with greater than 60% pine will be generally managed as pine. After analysis, the 84 acres of mixed pine/hardwood acreage will be managed as 32 acres of pine and 52 acres of hardwood, based on basal area data of the stands of SAF cover types 78 and 82.

$$32 \text{ acres pine} \times 20\% = \mathbf{6 \text{ acres of pine every 10 years}}$$

$$52 \text{ acres hardwood} \times 10\% = \mathbf{5 \text{ acres of hardwood every 10 years}}$$

Maximum Sustainable Regeneration Harvest For Each Ten Year Compartment Entry:

Pine Regeneration -	46 acres (40 + 6)
Hardwood Regeneration -	<u>64 acres (59 + 5)</u>
Total Sustainable Regeneration Harvest	= 110 acres (pine and hardwood combined)

D. Maximum Sustainable Thinning Harvest Calculations:

Allowing for two thinnings during both the 50-year rotation age for pine and 100-year rotation age for hardwood, the maximum sustainable harvest level each 10-year entry period is:

Pine Thinning:

$$\frac{226 \text{ (pine acreage)} \times 2 \text{ (thinnings per rotation)}}{5 \text{ (number of 10-year entry intervals per rotation age)}} = \mathbf{90.4 \text{ acres every 10 years}}$$

Hardwood Thinning:

$$\frac{638 \text{ (hardwood acreage)} \times 2 \text{ (thinnings per rotation)}}{10 \text{ (number of 10-year entry intervals per rotation age)}} = \mathbf{128 \text{ acres every 10 years}}$$

$$\mathbf{\text{Total Sustainable Thinning Harvest} = 218 \text{ acres (pine and hardwood combined)}}$$

Table 2 - Forest Compartment 21 Management Unit Information (see list of abbreviations used below)

Unit #	Exam Date	Age (2012)	SAF Type	Basal Area	Acre	Notes (see list of abbreviations below)	Prescription
1	Aug-Oct 2011	101	52	120	19	Mostly WO, NRO, HK. High site index. Dbh 20-28", some large NRO. No fire damage, fairly open understory. Minor mortality (gypsy moth damage) mostly along Upshur Road edge. Land-nav. boxes may still be used in TBS training. Lowe cemetery along MCB 8 at Upshur Rd corner, leave 200 ft. no-cut buffer along MCB 8 and cemetery.	Shelterwood Cut. Reduce BA to 50. Cut poor formed and heavily competing trees, plus undesirable species such as RM, SG, BE. Leave WO, NRO, HK for seed trees if healthy.
2		121	52	110	25	Mostly WO, NRO, HK. DBH range 18-26" dbh, some NRO larger. High site index. No fire damage, open understory. Chain link fence was mostly removed from SE edge, but not from NW edge along powerline. Remaining fence can be removed if necessary.	Shelterwood Cut Reduce BA to 40-50. Cut poor formed, heavily competing, trees, undesirable species such as RM, SG, BE. Leave WO, NRO, HK for seed trees if healthy.
3		96	59	90	17	Mostly WO, YP, NRO. Stand was thinned in 1999. Chain link fence on eastern edge no longer needed, can be damaged or removed.	Shelterwood Cut Reduce BA to 40-50. Cut poor shaped and heavily competing trees. Thin YP patches. Reduce undesirable species such as RM, SG, ASP, BE. Leave nicer WO, NRO, HK for seed trees
4		68	79	100	24	Over-mature Virginia pine, cut soon or lose to blowdown. Already converting, lots of blowdown and breakage. Large 2-story house on NE edge to be excluded from site. Create 2 acre wildlife food plot on south end	Pi ne clearcut (old VP) -create wildlife food plot (approx 2 acres)
5		57	79	90	23	Mature Virginia pine, cut soon or lose to blowdown and breakage. No roadside retention buffer needed along MCB 8. Old homesite flagged with fl. green flagging Jan 2012 is located on southern end near MCB 8	Pine clearcut (old VP)
6		20	81	120	12	Loblolly pine planted 1992 is now 8-12" dbh, needs thinning	Pine thinning (young LP)
7		20	81	110	26	Loblolly pine planted 1992 is now 8-12" dbh, needs thinning	Pine thinning (young LP)
8		23	81	90	17	Loblolly pine planted 1989 is now 12" dbh, needs thinning Has an old homesite near center, and another outside the unit to the north. Also an old associated cemetery w 2 unmarked stones, but could not find.	Pine thinning (young LP)

Roadwork Requirements for Compartment 21 Logging Access:

-Unit 2 access - Minor improvements needed to approx. 2500 feet of gravel trail inside the fenced area known as the “TA 17B Secret Squirrel” area. The first section, 1700 feet from MCB 8 north to fork in road, is in fairly good condition. This will only require a light coat of fine gravel (**approximately 60 tons**). The last 800 feet, from the fork leading NW to the proposed logging deck site requires grading, ditching, and water diversions, gravel-reinforced pullovers, plus heavier rocking (**approximately 200 tons**).

-Deck sites – Seven (7) logging operation deck sites would need some gravel fortification to support log trucks. These require approximately 15 tons of gravel per deck site (**105 tons**).

Roadwork Summary: Grade and gravel 2500 ft. of road (.5 miles). Total gravel = 365 tons

Abbreviations used:

Tree Species:

ASP – Bigtooth Aspen
BE – American Beech
CO – Chestnut Oak
HK – Hickory
LP – Loblolly Pine
NRO – Northern Red Oak
RM – Red Maple
SG – Sweetgum
SO – Scarlet Oak
SRO – Southern Red Oak
VP – Virginia Pine
WO – White Oak
YP- Yellow Poplar

Forestry Specific Terms:

BA – Basal Area (a measure of density or closeness of stems in a forest stand)
Dbh – Diameter at Breast Height - a measure of tree girth as measured 4.5 feet from the ground
Deck site – Staging area for logging operations where logs are processed and loaded onto tractor-trailers
SAF – Society of American Foresters (generate a numerical list of associated forest types)

Other Terms:

MCB – Marine Corps Base (often precedes base road number, i.e. MCB 8)
TBS – The Basic School

APPENDIX C

Scoping Meeting Information



UNITED STATES MARINE CORPS
MARINE CORPS BASE
QUANTICO, VIRGINIA 22134-5001

IN REPLY REFER TO:
10320/20
B 046

MAY 24 2012

From: Assistant Chief of Staff, G-5 (Installation and Environment Division)

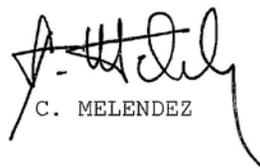
Subj: TIMBER HARVEST PROPOSAL FOR FOREST COMPARTMENT 21

Encl: (1) Timber Harvest Proposal Map
(2) Harvest Proposal Summary Tables

1. Addressees are invited to a scoping meeting to be held at 1400 on Tuesday, 19 June 2012, at Building 5-9 (white game check building across from Log Cabin, center door entrance). The purpose is to discuss issues related to a timber harvest proposal in Forest Compartment 21, which corresponds to Training Area 17B. The map and tables at enclosures (1) and (2), respectively, show the location, acreage, and general prescriptions for the sites.

2. Comments on the proposed actions will be solicited at this meeting. If a representative is unable to attend, written comments are requested before the meeting. Comments received will be documented and addressed in a site-specific environmental assessment document. The Command Environmental Impact Review Board is expected to review this document in their next quarterly meeting. If approved, the plan will be forwarded to the Commander, Marine Corps Base, Quantico for authorization.

3. Our points of contact within the Forestry Section for additional information are Mr. Bill Cross, Forestry Section Head, at (703) 432-6775, or Mr. John Giannico, Sale Planning Forester, at 432-6778.


C. MELENDEZ

Distribution:
COMDR, TRNG CMD
Counsel, MCCDC
Area Commander, Camp Upshur (Dir, RSU)
CPLO
AC/S, G-3
AC/S, G-5

Copy To:
CO, TBS (S3/S4)
HD, Range Management

Appendix D

Small-whorled Pognonia Survey Memorandum



UNITED STATES MARINE CORPS
MARINE CORPS BASE
QUANTICO, VIRGINIA 22134-5001

IN REPLY REFER TO:
11015/2
B 046
16 Jul 2014

MEMORANDUM FOR THE RECORD

From: Head, Fish, Wildlife and Agronomy Program, Natural Resources
and Environmental Affairs Branch

To: File

Subj: SMALL WHORLED POGONIA SURVEY FOR FOREST COMPARTMENT 21

Ref: (1) Angler Environmental Report: Threatened and Endangered
Species Survey for Small Whorled Pogonia (*Isotria medeoloides*) in
Forest Compartment 21. January 2013

1. On 17 July 2012, Angler Environmental surveyed 3 Timber Harvest
Units within Forest Compartment 21 for the presence of the small
whorled pogonia (SWP). The SWP is a federally listed threatened
plant species that occurs in forested habitat within Quantico
Training Areas.
2. No SWP were found in the project area. Angler Environmental
described the majority of the area as poor or unsuitable habitat
based on inappropriate slope orientation, slope gradient, canopy
closure, understory development and anthropogenic disturbances.
3. The proposed timber harvest should not impact any listed
threatened or endangered species.

ROHM.JOHN.H.1
459162603

Digitally signed by ROHM.JOHN.H.1459162603
DN: c=US, o=U.S. Government, ou=DoD, ou=PR,
ou=USMC, cn=ROHM.JOHN.H.1459162603
Date: 2014.07.16 13:39:18 -0400

J. H. ROHM

Appendix E

Cultural Resources Information

Home site and Cemetery information for TA 17B Timber Sale (Compartment 21) proposed harvest units - Report completed by John Giannico, Forester, NREA Forestry Section, on 7 Feb 2012. Sites were flagged with fluorescent green flagging around the perimeters to demark the "No Disturbance" area, in Feb 2012.

Harvest Unit 1 – Shelter wood harvest

Cemetery 4 (17b-4) – Lowe Cemetery, 3 graves –corners of MCB 8 and Upshur Road. This cemetery is on the SW corner of the proposed shelter wood harvest site. It will be excluded from the cut areas with a wide buffer left to keep any disturbance.

Harvest Unit 4 – Clear cut – Two old home sites are on opposite edges of this cutting unit. Home site labeled "Oh-17b-10" on the western edge can be marked as completely outside of the clear cut boundary since it abuts the young loblolly stand to the west and has no included Virginia pine to harvest on that western edge. There are no buildings or graves associated with this home site. Boundaries were flagged. Oh-17b-11 is on the NE end and can be entirely excluded from the boundary of this unit. It has a large structure remaining, but no graves associated with it. A "no disturbance boundary" was flagged with assistance from Base Cultural Resources Manager, Kate Roberts.

Harvest Unit 5 – Clear cut – OH-17b-6 is within the boundaries of this unit, close to MCB 8. There are a few old VP trees on the south edge between the home site boundary (as flagged) and the road that should probably be cut since they are so old, are near the roadside and will likely blow down if left. It is a narrow strip, but I believe trees can be removed from this narrow strip without a problem. There are no buildings and no graves associated with this site. Boundaries flagged.

Harvest Unit 7 – Loblolly thinning - This unit has one cemetery within the boundaries and one cemetery outside the unit boundaries associated with a large home site on the southern end of the compartment near MCB 8.

Cemetery 2 (17B-2) Apparently this one was not found by the previous crews looking for it as part of a cultural resource survey in this compartment. It was noted by former Base Cultural Resources Manager (John Haynes) in a report that this and nearby Cemetery 6 must have been destroyed by the clear cut logging that resulted in this loblolly pine planting about 20 years earlier. This site was recently found and based the finding that there were 11 apparent stones, as the Silverthorn survey indicated. It is part of large old home site (oh-17B-9), and is not at all in the loblolly stand as mapped. It is on the northeastern end of home site that has a cluster of unmarked head and footstones, 11 or 12 in number. Based on the sunken earth between head and footstones, it appears that 6 graves are present. Reddish colored fieldstones mark the head and foot of the graves. One stone had the word "Nov" scratched into it. The gravesite is very inconspicuous, easily missed. It is less than 100 feet from the edge of the loblolly pine stand, and the site is intact. There is now a large red maple growing among them.

Cemetery 6 (17B-6) Located in a small, roughly circular hardwood patch inside a loblolly pine stand, near western side. This was left undisturbed from previous logging also, contrary to earlier mapping. There appears to be four gravesites here, but only two have inscribed headstones. There appears to be

two other head and footstones with sunken earth that indicate other graves. Both marked headstones are lying on the ground, face up, beside each other. They read, as best determined:

Cemetery site 17B-6:

Inscribed Grave 1

JANE C. FITZHUGH

Who departed this

Life the 8 Nov 1881?

_____ years _____

(Unreadable text)

Inscribed Grave 2 (No name seen, possibly on back side of grave face down in ground)

Born in time this Day

Jan 26 1731 (possibly 1781) (3 could be an 8)

Died in the _____

Feb 16, 1820 (possibly 1870) (2 could be a 7)

Aged 39 (possibly 89) years & 21 days (3 could be an 8)

He sleeps in Jesus _____

Harvest Unit 8 – Loblolly pine thinning – Two old home sites are in or near the boundaries of this unit. Oh-17b-4 is a large site in the center of the unit, surrounded by loblolly pine. There are no buildings, foundations, or graves. There is only a well and some typical home site vegetation. Oh-17b-5 is on the north edge, extending to the edge of the big power line clearing. The unit can be marked to exclude this old home site completely. Both of these were flagged. There is supposedly an old cemetery to the northwest of this unit boundary but it could not be located.

*SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT
FOR THE
VIRGINIA RAILWAY EXPRESS
and
VIRGINIA DEPARTMENT OF RAIL AND PUBLIC TRANSPORTATION

ARKENDALE TO POWELL'S CREEK THIRD TRACK
(ALSO KNOWN AS CHERRY HILL THIRD TRACK)
CONCERNING THE
RELOCATION OF THE PLANTATION PIPELINE*



Date

David Valenstein
Chief, Environment and Planning Division
Federal Railroad Administration

I. Introduction

The Federal Railroad Administration (FRA), the Virginia Department of Rail and Public Transportation (DRPT), and the Virginia Railway Express (VRE) are collaborating on the evaluation of opportunities to provide additional capacity to improve intercity passenger rail service within the CSX Transportation, Inc. (CSXT) owned right-of-way (ROW). The Third Track Project (Project) is 11.4 miles and is located in Stafford and Prince William Counties, Virginia. The VRE and DRPT prepared an Environmental Assessment (EA) in July 2009 for the Arkendale to Powell's Creek Third Track Project (Milepost [MP] 72.0 and 83.4). The FRA reviewed the EA and determined that the Project would not have a significant impact on the natural, cultural or human environment. The FRA issued a Finding of No Significant Impact (FONSI) for the Project on February 4, 2011.

After the completion of the FONSI, and further development of preliminary engineering, DRPT and CSX recognized the need to relocate sections of an existing Plantation Pipeline (Pipeline) through the Project area due to anticipated disturbances from the construction of the third track Project. The Pipeline is owned by the Kinder Morgan Corporation of Houston, Texas. Kinder Morgan operates the Pipeline, a 12-inch diameter steel high pressure liquid petroleum products pipeline, between Louisiana and the Washington, D.C. area. The Pipeline supplies refined gasoline, diesel and jet fuel to the Washington, D.C. area. The Pipeline lies within the CSXT ROW through the majority of the length of the Project, generally parallel to the existing tracks at a depth of approximately 36 inches.

The CSXT ROW corridor typically varies from 75 to 100 feet wide through the length of the Project, which is constrained on the east side by the Potomac River and on the west side by a steep embankment approaching the CSXT ROW and the river. The CSXT ROW is further constrained in the central portion of the Project by the U.S. Marine Corps (USMC) at the USMC Base Quantico (Quantico or Base). The installation of the third track, along with adjustments to the existing tracks, associated grading, embankment stabilization, and undergrade roadway and waterway structures will directly disturb the existing Pipeline in constrained sections along the length of the Project.

Through coordination with representatives of the USMC at Quantico, the USMC and the Naval Facilities Command informed CSXT that the existing EA and subsequent FONSI would satisfy the National Environmental Policy Act (NEPA) responsibilities that related to the construction of the Project within the Base. Jointly, the representatives, recognized that the EA/FONSI did not sufficiently address the potential impacts associated with the relocation of the Pipeline due to the limited engineering detail available at the time of completion of the EA/FONSI, particularly within the CSXT ROW through the Base

FRA, in partnership with CSXT and DRPT, has determined that additional review of the concerns related to the Pipeline would be performed through FRA's existing NEPA procedures under a reevaluation of the previously completed EA and FONSI. Through the reevaluation, FRA would determine whether or not the proposed Pipeline relocation would have the potential to significantly affect the previous determination issued in the FONSI. Accordingly, this supplemental environmental document was prepared to analyze the potential environmental impacts of relocating approximately 3.3 miles of the Pipeline as required by the Project (see Figures 1 and 2). This supplemental document is being prepared according to FRA's Procedures for Considering Environmental Impacts (64 FR 28545 (May 26, 1999)).

II. Pipeline

a. Pipeline Relocation Alternative

The construction of the 11.4-mile third track in the Project will disturb approximately 3.3 miles of the existing Pipeline at constrained locations within CSXT ROW. Of the 3.3 miles, 2.77 miles would be relocated through horizontal directional drilling (HDD) to a depth of approximately 40 feet below the surface, and 0.53 miles would be relocated through more conventional pipeline installation methods, such as the open cut/excavation method (see Figure 1).

The 3.3 miles of Pipeline that will be relocated as part of this Project are distributed in three primary segments along the 11.4 mile project length, including:

1. Northern Segment:

The northern segment includes the disturbance of approximately 1,000 feet of Pipeline between MP 82.4 and MP 82.6 south of Powell's Creek near an area referred to as Cherry Hill, VA. In this segment, the existing Pipeline lies parallel to the CSX tracks on the west side of the ROW in the place of the new third track (future Track #3). The relocation of the Pipeline in this segment is physically constrained through a curve bound by the Potomac River to the east and a steep hillside to the west. Due to the constrained geography, there are no feasible construction alternatives for the placement of the third track or lateral relocation of the Pipeline within the CSX ROW through this segment of the Project. In this segment, the Pipeline is proposed to be relocated using the HDD method.

2. Central Segment:

The central segment includes the disturbance of approximately 14,000 feet of Pipeline between MP 75.4 and MP 79.0 through MCBQ. In this segment, the existing Pipeline primarily lies parallel to the CSX tracks on the east side of the ROW in the place of a series of embankment stabilization structures required for the construction of the new third track (future Track #1). The relocation of the Pipeline in this segment is physically constrained by the developed USMC Quantico property, the Potomac River to the east, and Chopawamsic Creek on the west. Due to the constrained geography and development, there are no feasible construction alternatives for the placement of the third track or lateral relocation of the Pipeline within the CSX ROW through this segment of the Project. CSXT proposes to relocate the Pipeline in this segment primarily using the HDD method. However, short segments of the Pipeline will be relocated using conventional methods.

3. Southern Segment:

The southern segment includes the disturbance of approximately 2,500 feet of Pipeline between MP 73.2 and MP 75.4 south of Quantico near an area referred to as Widewater, VA. In this segment, the existing Pipeline lies parallel to the CSX tracks on the east side of the ROW in place of a series of undergrade road and waterway crossings required for the construction of the new third track (future Track #1). For a short section from MP 74.4 through MP 74.8, the existing Pipeline shifts to the west side of the CSX tracks. The relocation of the Pipeline in this segment of the Project is required at five locations, including: the construction of an extended culvert over Tank Creek and embankment

stabilization near at MP 75.5, an extended bridge over a private crossing and embankment stabilization near MP 74.8, and a series of extended culverts between MP 74.0 and MP 73.4. Due to the constrained geography, adjacent utilities, and multiple waterways, there are no feasible construction alternatives for the placement of the third track or lateral relocation of the Pipeline within the CSX ROW through this segment of the Project. CSXT proposes to relocate the majority of the Pipeline in this segment using the HDD method.

The 40 foot depth reflects Kinder Morgan's design criteria and site-specific construction factors to avoid impacts to environmental and developed features, including: adjacent utilities, roadway and water crossings, wetlands, private property, USMC Quantico facilities, and railroad embankment stabilization applications. Kinder Morgan would pay for, oversee, and be responsible for the Pipeline relocation activities. Additionally, the 40 foot design criterion reinforces the structural and safety integrity of the Pipeline facility along the railroad corridor. The 40 foot depth provides protection from thaw/freeze action, and also would provide a much greater degree of protection to contain any Pipeline spill that might occur, and to prevent such spills from reaching streams or wetlands should a spill occur. The 40 foot depth would reduce potential impacts to the Pipeline from surface activities such as utility or road maintenance/construction and/or derailed trains. Similarly, by relocating the Pipeline deeper underground and, in some areas, off of existing bridges, the Pipeline relocation is anticipated to improve security by making the Pipeline less susceptible to unauthorized access.

b. No Relocation of Pipeline (No-Build Alternative)

Since the Pipeline relocation is necessary to construct the Project, the no-build alternative does not meet the purpose and need of the Project. Under the no-build alternative, current Pipeline operations would continue unchanged and the Pipeline location would not be moved. The No-Build Alternative was retained to provide a comparative baseline analysis as required under federal law.

III. Pipeline Relocation Construction Activities

This section will discuss construction activities associated with the Pipeline relocation. The relocated Pipeline would be designed, constructed, operated, and maintained in accordance with United States Department of Transportation (USDOT) Pipeline and Hazardous Material Safety Administration (PHMSA) Minimum Federal Safety Standards codified in 49 CFR 195. The Subparts of 49 CFR Part 195 address: design, construction, pressure testing, and protection of Pipeline facilities from internal, external, and atmospheric corrosion. Kinder Morgan will meet or exceed all PHMSA requirements.

Relocation is estimated to occur over a 3-month time period, but the actual duration of construction has not been fully determined. Approximately 80 personnel would be involved onsite during construction. Approximately 50 vehicles including construction equipment and privately-owned vehicles would be operated onsite. Vehicles would operate and park at night within the CSXT ROW, but access to the CSXT rail corridor would be required from Quantico and public roads.

Approximately 350 forty-foot long sections of 12-inch diameter steel line pipe plus pipe bends and other miscellaneous materials would be delivered using Quantico roads and other public roads. The pipe and materials would be staged elsewhere in Virginia and brought onsite by tractor trailer trucks and laid out along the rail corridor as needed during construction. Roadway traffic control measures/traffic maintenance measures would be required and provided during

the installation procedures. Pipeline work would be performed to avoid disrupting train traffic as well as blocking the public or Quantico roads except for brief periods of offloading equipment or materials. Most construction activity would occur within CSXT ROW.

Sections of pipe would be welded together using appropriate USDOT and American Petroleum Institute (API) specifications into "pipe strings" of 500 to 2,000 feet in length running parallel to the track bed. Pipe strings would be tested (e.g., welds x-rayed and filled with water and hydrostatically tested). Kinder Morgan would prepare a plan for hydrostatic test water procurement, handling, and disposal as permitted.

In accommodating the new third track, the Pipeline would be relocated to a depth of approximately 40 feet below the surface, and potential impacts to features, such as utilities, water bodies, and wetlands, would be avoided by using HDD instead of conventional pipe installation methods, such as the open cut method. Using HDD would minimize the amount of open trenching required along the railroad.

For HDD, a rig would drill and ream a pilot hole approximately 500 to 2,000 feet horizontal underground at a depth of approximately 40 feet. Throughout the process of drilling and enlarging the hole, slurry made of naturally occurring non-toxic materials, such as bentonite clay and water, would be circulated through the drilling tools to lubricate the drill bit, remove drill cuttings, and hold the hole open. This slurry is referred to as drilling mud.

Then, the drill rig pulls the new pipe through the reamed hole, so that the ends of the pipe string terminate near the existing Pipeline. Once the pipe strings are in place underground, tested hydrostatically, and made ready to be put into service with the existing Pipeline, the petroleum products are evacuated from the existing line. The evacuation would use a process called nitrogen displacement where nitrogen gas is injected into the line to push petroleum out of the Pipeline sections to be relocated. This process allows tie in welds to be safely performed before refilling the Pipeline. The abandoned Pipeline sections would either be removed or abandoned in place. Pipe to be abandoned in place would be filled with concrete grout and capped off at the ends. HDD entry and exit pits would be backfilled with previously excavated materials and graded.

For areas where trenching would occur, the trench would be excavated approximately 12 inches wider than the diameter of the pipe (i.e., 24 inches). The trench would be excavated with a rotary trenching machine, a track-mounted backhoe, or similar equipment. After the pipe is lowered into the trench, the trench would be backfilled using previously excavated materials.

Once sections of the Pipeline have been relocated, Pipeline operations would resume. Disturbed areas would be graded to be compatible with surrounding drainage patterns and revegetated, as appropriate. Sections of fence along the rail corridor within Quantico that were removed to facilitate access would be restored.

IV. Environmental Consequences

Using information from the EA/FONSI and its supporting studies, FRA and DRPT evaluated the potential for significant environmental impacts from relocating the Pipeline.

Post-relocation Operation Impacts

The Pipeline is subject to federal statutes, such as the Pipeline Safety and Partnership Act of 1996 and the Pipeline Safety, Regulatory Certainty, and Job Creation Act of 2011, which prescribe minimum federal safety standards for the transportation of petroleum and pipeline

facilities. The Virginia Corporation Commission has been certified to inspect and enforce pipeline safety regulations in Virginia.

USDOT PHMSA construction and operation standards are more rigorous today than when the Pipeline was originally constructed or last modified. The relocated Pipeline would be constructed with safety in mind, using best practices in anti-corrosion coatings and pipe materials, use of shutoff valves, testing requirements before the relocated Pipeline can be put in service, and compliance with the federal requirements in 49 CFR 195.

The relocated Pipeline would undergo regular inspection and maintenance. The primary inspection method is in-line inspection, in which diagnostic devices referred to as "smart pigs" travel inside the Pipeline identifying potential issues. In addition, control room operators continuously review information from a series of instruments/monitors along the length of the Pipeline. Using these systems, pipeline controllers can monitor changes in line pressure, flow rate and other inconsistencies, which might indicate a problem. Control room operators are trained to shut down sections of the Pipeline if there are potential problems or suspected leaks. Kinder Morgan has emergency response plans, maintains regular contact with fire departments and emergency response organizations along the Pipeline's length, and conducts drills to be ready.

Kinder Morgan will comply with federal USDOT PHMSA safety standards and, therefore, it is anticipated that prospective operation of the relocated Pipeline would fall within the category of No Significant Impact adopted by FRA in the earlier FONSI.

Pipeline Relocation Construction Impacts

Environmental impacts would occur during construction of the relocated Pipeline. Table 1 provides an at-a-glance summary of the environmental impacts assessment, with additional information for each resource and Pipeline relocation construction impacts provided below. Further details for each resource can be found in the EA/FONSI.

Table 1: Environmental Impacts

Resource	No Relocation	Pipeline Relocation Operation	Pipeline Relocation Construction	Mitigation
Land Use, Right-of-Way, and Relocations	○	○	○	N/A
Socioeconomics	○	○	+	N/A
Environmental Justice	○	○	○	N/A
Agriculture and Prime Farmland	○	○	○	N/A
Federal Properties	○	○	-	N/A
Parks and Recreational Resources	○	○	○	N/A
Section 4(f) Resources	○	○	○	N/A
Cultural Resources – Archaeology	○	○	○	N/A
Cultural Resources – Historic Structures	○	○	○	N/A
Waters of the US, including Wetlands	○	○	○	N/A

Resource	No Relocation	Pipeline Relocation Operation	Pipeline Relocation Construction	Mitigation
Floodplains	O	O	O	N/A
Air Quality	O	O	-	N/A
Noise	O	O	-	N/A
Vibration	O	O	-	N/A
Forest Resources	O	O	O	N/A
Mineral Resources	O	O	O	N/A
Energy Resources	O	O	O	N/A
Terrestrial and Aquatic Habitat and Wildlife	O	O	O	N/A
Threatened and Endangered Species	O	O	O	Final mitigation would be determined by VDGIF, but could include construction time-of-year restrictions
Wildlife and Waterfowl Refuges	O	O	O	N/A
Anadromous Fish, Trout Waters, Shellfish	O	O	O	N/A
Scenic Byways/Scenic Rivers	O	O	O	N/A
Open Space Easements	O	O	O	N/A
Hazardous Materials	O	O	O	N/A
Traffic & Rail Operations	O	O	-	N/A
Safety/Security	O	+	+	N/A
Legend: O No impact + Minimal Positive Impact - Minimal Negative Impact				

Land Use, Right-of-Way, and Relocations: Much of the existing CSXT ROW has been previously disturbed from the construction of various transportation routes (e.g., railroads, streets), military installations, utilities, and industrial development. The Pipeline relocation would remain within the existing CSXT ROW and therefore, no changes in land use or residential/business relocations are anticipated.

Socioeconomics: No change in full-time employment is expected as this is a Pipeline relocation construction project and not proposed construction of a new Pipeline. The temporary employment requirements during the Pipeline relocation would be met by a combination of local and non-local workers who would travel to the area during the three-month construction time period. A short-term economic benefit to owners of local businesses, such as restaurants, gas stations, and motels, is expected to occur during the construction period. Sufficient temporary lodging exists within a reasonable commuting distance (1-hour drive) to house the anticipated number of non-local workers with minimal disruption to the local population. Material purchases from the local area would include fuel, food, and miscellaneous construction supplies. Most

major Pipeline components (e.g., pipe, valves, and fittings) would be obtained from outside the area and would be brought in by rail and then transferred to trucks for local delivery.

Environmental Justice: Based on US Census data, no low-income or minority populations would be affected by the Pipeline relocation and therefore, no Environmental Justice concerns or disproportionate adverse impacts to low-income or minority populations would occur. Temporary local employee hiring would conform to equal employment opportunity requirements.

Agricultural and Prime Farmland: No prime farmland or agricultural uses occur within the CSXT ROW. Therefore, no impacts are anticipated.

Federal Properties: The CSXT ROW runs through MCBQ. Access to the CSXT ROW for the Pipeline relocation would require the use of MCBQ roads. Designated access points would be determined in consultation with MCBQ representatives. To avoid impacts to utilities and roads and the Chopawamsic Creek, the relocated Pipeline would be installed at a deeper depth using HDD (see Figure 1, Page 2 and Figure 2, Page 2). Impacts to MCBQ are anticipated to be minimal and short term during construction.

Parks and Recreation: No existing parks or recreational facilities occur within the relocation area. Therefore, no impacts are anticipated.

Section 4(f) Resources: The only Section 4(f) resource potentially affected by the Pipeline relocation is the Richmond, Fredericksburg & Potomac Railroad (RF&P) (current CSXT railroad) which was determined eligible for listing on the National Register of Historic Places (NRHP). The Virginia Department of Historic Resources (DHR) concurred on October 7, 2010 that the Project would have No Adverse Effect on historic properties listed or eligible for the NRHP (see July 2009 EA). The Pipeline currently is located within CSXT ROW and the temporary construction activities associated with this relocation are not anticipated to effect this determination.

Cultural Resources: No archaeological sites within the Project area of potential effect were determined to be eligible for listing on the NRHP (see October 6, 2010 DHR letter included in the July 2009 EA). As discussed above, the RF&P is eligible for listing on the NRHP and the DHR previously concurred that the Project would have a No Adverse Effect on the RF&P. The Pipeline currently is located within CSXT ROW and the Pipeline relocation is not anticipated to affect these determinations. Therefore, the HDD activities contemplated by Kinder Morgan are not likely to have an adverse effect on cultural resources either.

Waters of the United States, Including Wetlands: The EA/FONSI identified jurisdictional waters of the United States and wetlands within the Project corridor and potential impacts of 1,580 linear feet and 2.275 acres, respectively. The Pipeline relocation would occur in the Project area and would avoid and/or minimize impacts to "waters of the United States", such as Chopawamsic Creek and Tank Creek, and wetlands by using HDD. The Pipeline would be relocated below these resources (approximately 40 feet below surface) and HDD entry and exit pits and work areas would not be located within these resources. Similarly, the pilot hole surveying/tracking system, which monitors the direction of the drill path, would not disturb the soil surface.

Standard erosion control measures would be implemented to ensure that grounds disturbed by the Pipeline relocation construction activities (e.g., HDD entry and exit pits) would not generate excessive soil erosion or sedimentary runoff. An HDD contingency plan for crossing water bodies and wetlands would be developed by Kinder Morgan to address an inadvertent release of drilling muds. During final design, Kinder Morgan would confirm that no Clean Water Act

Section 404 permit or Virginia Water Protection Permit would be required for the Pipeline relocation.

Floodplains: The 100-year floodplains were identified using the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM). Mapped floodplain areas include areas adjacent to the Potomac River, Quantico Creek, Chopawamsic Creek, Tank Creek, and other unnamed perennial tributaries of the Potomac River. A construction in a floodplain permit would be required. The Pipeline relocation is not anticipated to have floodplain impacts due to the use of HDD and the regrading of any disturbed areas to existing elevations.

Air Quality: No negative impacts to National Ambient Air Quality Standards (NAAQS) are anticipated as part of the Pipeline relocation. Prince William and Stafford County have been designated as attainment for particulate matter (PM_{2.5}). During construction, a minimal increase in fugitive dust emissions would occur, but impacts would be temporary. Best management practices (BMPs) would be followed to minimize and control fugitive dust. Some nitrogen gas would be vented into the atmosphere prior to refilling the Pipeline with petroleum. In addition, exhaust from mechanized equipment, such as the drill rig, backhoe, ditch witch, or trucks, would have temporary minor impacts to local air quality.

Noise: No significant, long-term construction-related noise impacts are anticipated from the Pipeline relocation. Temporary construction noise from equipment and vehicles would occur but would cease upon completion of the Pipeline relocation construction phase. While noise levels would vary for different construction tasks, the maximum expected noise levels would occur from stages of construction involving heavy equipment, such as the drill rig. Based on FTA Construction Equipment Noise Emission Levels, the project maximum intermittent noise levels would range from 75 to 100 dBA (A-weighted decibel) at 50 feet from the source. Construction noise would be temporary and would shift as the relocation work would occur along the corridor. BMPs would be implemented to reduce noise impacts such as locating stationary equipment as far away from sensitive receivers as possible; selecting material transportation routes as far away from sensitive receivers as possible; shutting down noise-generating heavy equipment when it is not needed; and maintaining equipment per manufacturer's recommendations. Any noise generated by Pipeline operations would return to pre-construction levels.

Vibration: No long-term vibration impacts are anticipated as part of the Pipeline relocation. Some temporary vibration impacts could occur due to the HDD, but construction vibration is rarely associated with building interruption or damage (see July 2009 Air, Noise & Vibration Technical Report).

Forest Resources: Forest resources are not found within the CSX ROW. As a result, no impacts to any known forest resources within the Pipeline relocation area are anticipated.

Mineral Resources: No impacts to any known mineral resources within the Pipeline relocation area are anticipated.

Energy Resources: No impacts to any known energy resources within the Pipeline relocation area are anticipated.

Terrestrial and Aquatic Habitat and Wildlife: The Pipeline relocation would occur within existing CSXT ROW that has been previously disturbed as well as the use of HDD to install the majority of the relocated Pipeline. No unique terrestrial or aquatic habitat or wildlife areas occur within the Pipeline relocation area; therefore, no significant impacts are anticipated.

Threatened and Endangered Species: USFWS determined that the Project would have no impact to known endangered mussel, plant and/or insect species. Bald eagles are currently de-

listed under the Federal Endangered Species Act; however, they are still recognized as a threatened species at the State level and are protected by the Bald Eagle Protection Act and the Migratory Bird Treaty Act. Several bald eagle nests may occur within the 660-foot nest protection zone. VDGIF previously recommended for the Project that during final design, detailed maps and a description of the proposed work be provided so that final comments can be made regarding the protection of the bald eagles and potential time-of-year construction restrictions. Similar coordination with VDGIF would occur related to the Pipeline relocation. No impacts to threatened and endangered species are anticipated from the Pipeline relocation.

Wildlife and Waterfowl Refuges: No wildlife or waterfowl refuges occur in the Pipeline relocation area.

Anadromous Fish, Trout Waters, Shellfish: No in-stream work would occur at the Chopawamsic Creek as part of the Pipeline relocation. Therefore, there is no potential to affect the blueback herring and yellow perch species.

Scenic Byways/Scenic Rivers: No federally designated wild and scenic rivers or state-designated scenic byways or scenic rivers are located within or near the Pipeline relocation area.

Open Space Easements: No open space easements are held by the Virginia Outdoors Foundation in the Pipeline relocation area.

Hazardous Materials: The petroleum products evacuated from the Pipeline from the construction area using the nitrogen displacement process would not generate hazardous materials as all petroleum would remain within the Pipeline.

CSXT is not aware of any contamination within its ROW in the Pipeline relocation area. Kinder Morgan would be subject to its own and CSXT's safety and environmental policies and both companies will conduct monitoring during construction activities. If potential contamination is identified during construction, CSXT policies concerning assessment, mitigation, and management would be followed. The management of wastes generated by construction would comply with applicable federal and state requirements. If contamination is identified within the Pipeline relocation area, CSXT would comply with the FONSI mitigation commitment and discuss potential mitigation with VRE and DRPT. Other federal and state agencies would be consulted, as appropriate.

No change in the generation of operational and maintenance wastes from the relocated Pipeline are anticipated.

Transportation and Railroad Operations: Pipe and materials would be staged elsewhere in Virginia and brought onsite by tractor trailer trucks and laid out along the rail corridor as needed during construction. Pipeline work would be performed to avoid disrupting train traffic as well as blocking public or Quantico roads except for brief periods of offloading equipment or materials. Roadway traffic control measures/traffic maintenance measures would be implemented in coordination with CSXT, USMC, and local officials, as appropriate. Roads in the area are subject to regular truck and workforce traffic. The Pipeline relocation is anticipated to have a minimal, short-term impact on transportation and railroad operations during construction.

Safety: The Pipeline relocation is not anticipated to change any of the at-grade rail crossings that would be rebuilt as part of the Project. No effect on public health is expected by relocating the Pipeline within the CSXT ROW. Safety and security concerns have changed the way pipeline operators, as well as Quantico, consider terrorism. By relocating the Pipeline deeper underground and in some areas off of existing bridges, the Pipeline relocation is anticipated to

improve Pipeline security. Additionally, a derailed train can dig into the earth and could potentially damage or disrupt the Pipeline. The relocation of the segments of the Pipeline as required by the Project allows for the mitigation of this risk through the affected Project area.

Indirect and Cumulative Effects: Indirect effects from the Pipeline relocation are expected to be either minimal or nonexistent as the Pipeline relocation is not expected to induce development and planned development is anticipated to occur regardless of the Pipeline relocation. Similarly, the Pipeline relocation is not expected to contribute to the past, future, and reasonably foreseeable future actions that may affect environmental resources in the Pipeline relocation area (see July 2009 EA). The Pipeline relocation is not anticipated to have any significant indirect or cumulative impacts.

Construction Activities: Construction activities would follow federal, state, and local statutes, regulations, and ordinances and proper permits would be obtained. A Stormwater Pollution Prevention Plan (SWPPP) may need to be prepared and the Virginia Stormwater Management Program (VSMP) permit would need to be acquired from the Virginia Department of Conservation and Recreation (VDCR). In addition, the construction work must be completed in accordance with the Stafford County and Prince William County land disturbance practices and permits.

V. Conclusion

The relocation of the Pipeline would have temporary, less than significant construction impacts to air quality, noise, vibration, Federal properties, socioeconomics, traffic, and safety. Once the relocation is completed and the Pipeline is operational again, environmental impacts would return to current conditions. Based on the above assessment, the Pipeline relocation is not anticipated to have a significant impact on the natural, cultural or human environment.



UNITED STATES MARINE CORPS

MARINE CORPS BASE
3250 CATLIN AVE
QUANTICO, VIRGINIA 22134-5001

IN REPLY REFER TO:

5090

B 046

0, 1 AUG 2014

MEMORANDUM FOR THE RECORD

Subj: CATEGORICAL EXCLUSION (CE) TO UPGRADE AIR TRAFFIC CONTROL TOWER BUILDING 2105 FOR NATIONAL AIRSPACE SYSTEM MODERNIZATION (NAS Mod) AT MARINE CORPS AIR FACILITY (MCAF)

Ref: (a) MCO P5090.2A Ch. 3

Encl: (1) Basis of Design excerpts and location map
(2) Project drawings
(3) DHR File #2014-3435
(4) Record of Non-Applicability for General Conformity
(5) 2014 Construction Waste Management Report

1. Per reference (a), the subject action has been reviewed under Marine Corps procedures for implementing the National Environmental Policy Act (NEPA).

2. Proposed Action. The proposed project would provide interior and exterior upgrades to the Air Traffic Control Tower (ATCT) at building 2105 (b-2105) at the Marine Corps Air Facility (MCAF) at Marine Corps Base Quantico (MCBQ), as shown at enclosure (1).

3. Purpose. The purpose of this project is to provide support for equipment upgrades and space renovations to the existing ATCT, b-2105. The National Airspace System Modernization (NAS Mod) Program is a joint Department of Defense/Federal Aviation Administration modernization program whose mission is to keep the United States' aging Air Traffic Control (ATC) systems efficient, supportable, and common within the NAS. The project would include identification of building and site modifications to accommodate the installation of NAS Mod equipment. B-2105 is an Air Operations Facility and hangar. The NAS Mod ATC systems equipment upgrade would modernize the ATC systems equipment in the ATCT, Radar Air Traffic Control Facility (RATCF) Instrument Flight Rules (IFR) room, RATCF IFR equipment room, and Flight Planning/Weather spaces. The project would include upgrades to the existing facility and systems for electrical, communications, heating, ventilation, and air conditioning (HVAC), and fire protection to accommodate the new ATC equipment

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(MCAF)

upgrade. The project would also include the work necessary to prepare the site and provide a temporary source of power for the Transportable Air Traffic Control Facility (TATCF).

4. Project Description.

The subject project would include interior demolition of partitions, selective exterior demolition, electrical, mechanical and plumbing modifications and replacement to create a new IFR room, IFR equipment room, and training room, as shown at enclosure (2).

The existing exterior walls are brick and masonry with insulated metal stud furring. Modifications to the exterior walls would include removal of windows and a door, and in-filling and patching the openings. The existing exterior windows at the second floor level are single pane double hung wood windows. Proposed window modifications at the second floor existing break room would include removal and in-filling of the openings. Window in-fills would be accomplished with brick and metal stud, with gypsum wall board on the interior. Exterior finishes would be selected to match the existing in color, dimensions, and appearance in accordance with the Integrated Cultural Resources Management Plan (ICRMP) and the Base Exterior Architecture Plan (BEAP).

The existing exterior door at the second floor IFR room is a steel door in a steel frame. The door and frame would be removed and the opening in-filled. The door in-fill would be brick and metal stud with gypsum wall board on the interior. All architectural renovations and finishing will be done to match or blend with the surrounding existing conditions in accordance with the ICRMP and the BEAP.

Exterior site improvements would be limited to the removal of existing mechanical equipment and pads, and 32 linear feet of concrete sidewalk. Three new mechanical equipment pads will be provided and the sidewalk will be relocated adjacent to them. Permanent vegetation will be provided on all disturbed areas.

5. Affected Environment. This action would not adversely affect threatened or endangered species, cultural resources, noise, water quality, air quality and greenhouse gases, military training, recreational activities, or minority or low-income populations.

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Threatened/Endangered Species: The base supports a wide variety of both game and non-game species and a diversity of wildlife habitat is available. Game species include white-tailed deer, wild turkey, gray squirrel, cottontail rabbit and bobwhite quail. Non-game species include resident and migratory songbirds, raptors, and various reptiles, amphibians, and insects. Migratory birds utilize a variety of habitats available throughout MCBQ including forestland, grassland, wetland, and riparian corridors.

The Migratory Bird Treaty Act (MBTA) protects all species covered by the four migratory bird treaties the United States signed with Canada, Mexico, Japan, and Russia. The MBTA prohibits taking, killing, or possessing of migratory birds (including parts, feathers, nests, and eggs) unless permitted by the Secretary of the Interior. The United States Fish and Wildlife Service (USFWS) currently recognizes 832 species of migratory birds. Per Executive Order 13186, Responsibilities of Federal Agencies to Migratory Birds (2001), DOD and USFWS set forth a Memorandum of Understanding (MOU) to promote the conservation of migratory birds. Habitat critical to migratory birds are not located within the proposed project area.

The bald eagle, *Haliaeetus leucocephalus*, was removed from the Federal List of Endangered and Threatened Wildlife and Plants in 2007 due to population recovery. The bald eagle is still afforded federal protection under the Migratory Bird Treaty Act (see Section 3.3.2) and the Bald and Golden Eagle Act and is considered a species of concern. The Bald and Golden Eagle Act (1940) requires a buffer of 660 feet around a nesting site. No nesting sites have been observed in the project area.

There are two endangered species and one threatened species known to be present at Quantico. These are, respectively, the dwarf wedge mussel (*Alasmidonta heterodon*), harperella (*Ptilimnium nodosum*), and the small whorled pogonia (*Isotria medeoloides*). None of these species are located in the proposed project area or within the vicinity.

Cultural/Archeological Resources: Building 2105 is a contributing element of the Marine Corps Base Quantico Historic District. As required by the National Historic Preservation Act, plans for this project were provided to the State Historic Preservation Officer (SHPO) through the Virginia Department of Historic Resources electronic project information exchange

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system. The SHPO agreed with the base's opinion that the exterior changes would have an effect on b-2105, but the effect would not be adverse. The SHPO response is at enclosure (3).

Noise: Existing noise levels in the project area are primarily from air operations at the MCAF and the nearby Virginia Railway Express rail line. Other noise contributions come from temporary construction activities, but these are minor. Ordnance used in live and simulated fire exercises is generally conducted at ranges on the western "Guadalcanal" side of the base, eight miles or more from the project area. There would be no additional noise associated with the sites after construction activities.

Air Quality/Greenhouse Gases: A conformity determination in accordance with 40 CFR Part 81 is not required in this case because the total of direct and indirect nitrogen oxides (NOx) and volatile organic compound (VOC) emissions is below 50 tons per year of VOC and 100 tons per year of NOx. A Record of Non-Applicability for General Conformity is at enclosure (4).

Hazardous Materials/Waste/Solid Waste: The proposed project would result in construction demolition debris (CDD) and waste. Reports of waste generated (including recycling) including material type (CDD, concrete, scrap metal, used oil, etc.), tons, disposal destination, and disposal cost shall be reported via the Construction Waste Management Report to NREA within 30 days of the close of the project, and no later than October 15, to be included in annual report submissions (see enclosure 5). All spoils and debris generated by the construction operation shall be transported off base and disposed of in accordance with all federal, state, and local regulations.

The contractor is responsible for coordinating all solid waste disposals at a landfill that meets all Federal, State, and local regulatory standards. The contractor will support the solid waste diversion philosophy outlined in EO 13514 by recovering/recycling.

The proposed project would have no effect on general procedures for hazardous materials and hazardous waste management at MCBQ. There is no impact from hazardous materials and/or waste anticipated with this project. No hazardous materials would be introduced under this project.

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Water Quality: No wetlands or surface waters will be directly affected through filling or alteration of hydrology. Potential water quality impacts from soil disturbances will be mitigated through the implementation of Best Management Practices per the Virginia Erosion and Sediment Control Handbook (1992). The project would require installation of proper erosion and sediment control (E&SC) measures (such as proper silt fence and storm drain inlets) prior to the onset of any land disturbing activities.

Land Use/Military Training: The intended land use for MCAF is military training and flight operations. No land clearing activities would be conducted as a part of the proposed project. The project would not be expected to change or affect the geology of the area, nor would it impact the topography of the base. Military training could be affected via construction activities. These effects are considered temporary in nature and would not be significant. In the event mechanical crane usage is needed for this project, the MCAF must be informed prior to crane erection as coordination with the Federal Aviation Administration (FAA) may be required.

Recreational Activities: Hunting, fishing, and hiking areas do not exist in the immediate proposed project area. Hunting and fishing activities occur on Chopawamsic Creek and the Potomac River. Duck blinds are located approximately 0.5 mile to the northeast, and in several locations in Chopawamsic Creek. The proposed upgrades to b-2105 would not have an effect on recreational opportunities aboard MCBQ.

Socioeconomic: The proposed project would not be expected to impact the socioeconomics or create disproportionately high and adverse human health or environmental effects to minority, low-income populations, or children at MCBQ or in the surrounding area.

This project will have temporary minor impacts such as noise created by construction activities and these impacts will not disproportionately affect children. Best management practices such as dust management would also be employed to eliminate or keep temporary environmental nuisances to a minimum.

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6. NEPA Documentation. The proposed action meets the criteria for a CE per paragraph 12201.3.a(23) of the reference. This CE is for "Non-routine repair and renovation, and donation or other transfer of structures, vessels, aircraft, landscapes, or other contributing elements of facilities listed or eligible for listing on the National Register of Historic Places which will result in no adverse effect."

7. Recommendation. That the subject CE be recommended for approval by the Environmental Impact Review Board.



AMY P. DENN
Head, Natural Resources and
Environmental Affairs Branch

BASIS OF DESIGN**1. BASIS OF DESIGN****I. PROJECT OVERVIEW**

The purpose of this project is to provide support for equipment upgrades and space renovations to the existing Air Traffic Control Tower (ATCT), Building B-2105 within the Marine Corps Base in Quantico, Virginia. The project design includes identification of building and site modifications to accommodate the installation of National Airspace System Modernization (NAS Mod) equipment. Building B-2105 is an Air Operations Facility and hangar. The NAS Mod Air Traffic Control (ATC) systems equipment upgrade will modernize ATC systems equipment in the ATCT, Radar Air Traffic Control Facility (RATCF) Instrument Flight Rules (IFR) Room, RATCF IFR Equipment Room, and Flight Planning/Weather spaces. The design includes upgrades to the existing facility spaces and systems for electrical, communications, heating, ventilation, and air conditioning (HVAC), and fire protection to accommodate the new ATC equipment upgrade. The design will also detail the work necessary to prepare the site and provide a temporary source of power for the Transportable Air Traffic Control Facility (TATCF).

These are not requirements of the current design:

1. Designing to achieve LEED credits
2. Life cycle cost analysis
3. Designing per EPA Act 2005 requirements

BASIS OF DESIGN

II. ARCHITECTURAL

A. General

Project renovations of Building B-2105 will include interior demolition of partitions, selective exterior demolition, electrical, mechanical and plumbing modifications and replacement to create a new Instrument Flight Rules (IFR) Room, IFR Equipment Room, and Training Room. Description of existing conditions and new work are described below.

B. Existing Conditions/Demolition

Building B-2105 is a two story hangar constructed in the 1940's with a 2006 renovation to the Air Traffic Control Tower addition that included a stair addition and new Tower Cab. Building B-2105 existing finishes are as follows:

- a. Existing roof system is an Ethylene Propylene Diene Monomer (EPDM).
- b. Existing exterior walls are brick and masonry with insulated metal stud furring wall. Modifications to the exterior walls will include window and door opening in-fill and patching.
- c. Existing exterior windows at second floor are single pane double hung wood windows. Window modifications at the second floor existing break room will include removal and in-fill. Window in-fills will be with brick and metal stud with gypsum wall board on the interior side.
- d. Existing exterior door at the second floor IFR Room is a steel door in a steel frame. The door and frame will be removed and in-filled. Door in-fill will be with brick and metal stud with gypsum wall board on the interior side.
- e. Existing interior walls on the first and second floors are metal stud partitions with drywall finish on each exposed side.
- f. Existing floors on the second floor are carpeted rigid grid access floor and vinyl composition tile over concrete.
- g. Existing ceilings on the second floor are suspended acoustical ceilings. Existing ceilings at the IFR have sound attenuation batt insulation above.

C. New Work

Building B-2105 new work will take place in the plan south wing of the hangar on the first floor Flight Planning/Weather Room and second floor IFR Room, IFR Equipment Room and Training Room. Work will also take place on the fifth floor Air Traffic Control (ATC) cab. Building B-2105 new work will consist of the following:

1. WX Weather Room, (first floor room 125):
 - a. Installation of Briefing Console casework to house ATC electronic equipment. ATC electronic equipment, Government Furnished Government Installed (GFGI).
 - b. Installation of metal stud electrical chase with drywall for electrical distribution to the Briefing Console.
 - c. Paint electrical chase walls.

BASIS OF DESIGN

2. Training Room (second floor room 208):
 - a. Installation of 3-5/8" metal stud partitions with 5/8" gypsum wall board on each exposed side and 3-1/2" sound attenuation insulation. Partitions extend from the top of the rigid grid access floor to 6" above finished ceiling and diagonal bracing at 4'-0" on center to roof structure above.
 - b. Installation of rigid grid access floor system with static dissipative carpet. Rigid grid access floor to be at 1'-3" above existing second floor concrete slab.
 - c. Installation of rubber wall base.
 - d. Installation of 24" x 24" acoustical ceiling tile and grid with 3-1/2" sound attenuation insulation. Ceilings to be 8'-6" above rigid grid access floor.
 - e. Installation of a (42" x 84") steel door, frame and hardware.
3. IFR Room (second floor room 210):
 - a. Installation of 3-5/8" metal stud partitions with 5/8" gypsum wall board on each exposed side and 3-1/2" sound attenuation insulation. Partitions extend from the top of the rigid grid access floor to 6" above finished ceiling and diagonal bracing at 4'-0" on center to roof structure above. Acoustical wall panels to be located on along plan south exterior wall and a portion of the west interior wall beside the supervisor's console.
 - b. Installation of rigid grid access floor system with static dissipative carpet. Rigid grid access floor to be at 1'-3" above existing second floor concrete slab.
 - c. Installation of rubber wall base.
 - d. Installation of 24" x 24" acoustical ceiling tile and grid with 3-1/2" sound attenuation insulation. Ceilings to be 8'-6" above rigid grid access floor.
 - f. Installation of a (42" x 84") steel door, frame and hardware.
 - e. ATC equipment will be (GFGI).
 - f. Installation of sound and light absorbent curtain (theater style, black fabric) at Improved Precision Approach Radar Trainer (IPART) training space, (GFGI).
 - g. Installation of light block fabric above ATC electronic equipment, (GFGI).
 - h. Two window in-fills with brick and 3-5/8" cold formed steel studs spaced at 16" on center with 5/8" gypsum wall board and batt insulation.
 - i. One door infill with double wythe brick on exterior and 2-1/2" metal studs spaced at 16" on center with 5/8" gypsum wall board and batt insulation on the interior.
4. IFR Equipment Room (second floor room 211):
 - a. Installation of 3-5/8" metal stud partitions with 5/8" gypsum wall board on each exposed side. Partitions extend from the top of the rigid grid access floor to 6" above finished ceiling and diagonal bracing at 4'-0" on center to roof structure above.
 - b. Installation of rigid grid access floor system with static dissipative carpet.
 - c. Installation of rubber wall base.
 - d. Installation of 24" x 24" acoustical ceiling tile and grid.
 - e. ATC equipment will be government provided and government installed.
 - f. Existing four (4) windows will receive room darkening shades.

BASIS OF DESIGN

5. Grounding Electronics Maintenance Division (second floor room 205):
 - a. Installation of carpet tile on rigid grid access floor at the entrance to the IFR Equipment Room.
 - b. Installation of rigid grid access steps and hand rails.
 - c. Installation of a (pair of 36" x 84") steel door, hardware and steel door frame.
6. Vestibule (second floor room 207)
 - a. Installation of vinyl composition tile.
 - a. Installation of rubber wall base.
 - b. Installation of 24" x 24" acoustical ceiling tile and grid.
 - c. Installation of rigid grid access steps and hand rail system.
 - d. Installation of a (42" x 84") steel door, hardware and steel door frame leading into the IFR Room 210.
 - e. Installation of a (42" x 84") steel door, hardware and steel door frame leading into the ASOS/ECS Equipment Room 209.
7. Office (second floor room 213):
 - a. Installation of rigid grid access floor system with static dissipative carpet. Rigid grid access floor to be at 1'-3" above existing second floor concrete slab.
 - b. Installation of rubber wall base.
 - c. Installation of 24" x 24" acoustical ceiling tile and grid.
8. Air Traffic Control Tower Cab (fifth floor room 500):
 - a. Installation of acoustical ceiling tile in existing ceiling grid. Ceiling tiles will be black died-type.
 - b. Installation of a steel beam above acoustical ceiling for overhead mounting monitor for workstation. Monitor for workstation, (GFGI).

D. Design Criteria

1. International Building Code (IBC) 2009
2. NFPA Life Safety Code 2009
3. Statement of Architectural & Engineering Services, dated August 30, 2011
4. Unified Facilities Criteria (UFC) 1-300-09N, Design Procedures
5. Unified Facilities Criteria (UFC) 4-133-01N, Navy Air Traffic Control Facilities (as applicable)
6. Radar Air Traffic Control Facility (RATCF) and Air Traffic Control Tower (ATCT) Facility Requirements Document (FRD), Version 1.0

E. Type of Construction

The existing building is Type II B, non-combustible construction. The building has load-bearing masonry walls with interior steel columns at each side of the high hangar bay. The first floor is concrete slab-on-grade. The second floor is concrete slab on metal deck on steel beams or bar joists. Exterior walls are load bearing masonry, all around the building. Existing exterior walls have metal studs with batt insulation and gypsum wall board on the inside face. The roof is a low-slope roof with a Ethylene Propylene Diene Monomer (EPDM) roof system.

BASIS OF DESIGN**F. Gross Floor Area Calculations**

The existing hangar Building B-2105 has the following approximate square footages;

a. First Floor (total)	24,934 SF
b. Second Floor (north wing)	3,441 SF
c. Second Floor (south wing)	3,719 SF
d. Third Floor (control tower)	780 SF
e. Fourth Floor (control tower mezzanine)	480 SF
f. Fifth Floor Control Tower Cab	340 SF
Total	33,694 SF

Per the Statement of A-E Services, the scope requires the majority of the renovations to take place in the south wing second floor with limited work on the first floor and Control Tower Cab floor as described above under new work.

G. Handicapped Accessibility

Per the Statement of A-E Services, the scope does not require the areas being renovated to meet current ADA/ABA requirements. Facility is for able body personnel.

H. Architectural Compatibility

All architectural renovations will be done to match or blend with the surrounding existing conditions.

I. Roof System Selection

N/A

J. Thermal Insulation

N/A

K. Architectural Acoustics

Per (UFC) 4-133-01N, Navy Air Traffic Control Facilities there are prescribed acoustic requirements for ATC Operation, IFR and IFR Equipment Room; however per the Statement of A-E Services the design does not include altering the existing perimeter walls. Interior walls and ceilings within the IFR (210) and Training room (208) areas will receive 3-1/2" sound attenuation insulation to help with sound transmissions. Selective walls in the IFR room will also receive acoustical wall panels as indicated on plans.

L. Waterproofing

N/A

BASIS OF DESIGN**M. Doors and Windows**

All interior doors within the renovated areas will be steel doors mounted in steel frames. Existing ground floor stair door (S101) leading to the IFR room and tower cab will receive an electric strike. Door S101 has an existing cipher lock which will remain. Power supply and two push button door release devices will be added (one in the IFR room and the other in the tower cab). Push button door release devices will allow IFR and tower cab personnel to grant access to individual's without the cipher lock code. Door S101 will always maintain free egress from stairwell. There are no new windows in the scope of work per the Statement of A-E Services.

N. Elevator

N/A, see comments under Handicapped Accessibility.

O. Effects of ATFP Criteria

The total cost of renovations to Building B-2105 is less than fifty percent of the replacement value of the building. Therefore, the renovated portion of the building should is not required to comply with current ATFP criteria.

III. CIVIL**A. General**

Exterior site improvements are limited to the removal of existing mechanical equipment and pads and thirty-two linear feet of concrete sidewalk. Three new mechanical equipment pads will be provided and the sidewalk will be relocated adjacent to them. Permanent vegetation will be provided on all disturbed areas. Civil will assist electrical in showing underground fiber optic cable run to the brig as well as provide a site plan for placement of the TATCT adjacent to the existing structure.

BASIS OF DESIGN

IV. STRUCTURAL

A. New Work

Structural will aid mechanical in location of HVAC unit location and mounting as needed. Structural will also assist architectural in providing a steel beam to support mounting of the monitor in the ATCT cab and cold-formed metal framing for infill locations at the exterior wall.

BASIS OF DESIGN

VI. MECHANICAL

A. Existing Conditions

A field survey was performed to determine existing conditions for project. During the field survey, information about the existing systems was collected and evaluated to determine if future needs could be met utilizing the existing systems in their current configurations. The existing systems were also analyzed for compliance with UFC 4-133-01N and the Facility Requirements Document for RATCF and ATCT.

Some aspects of the mechanical system to be evaluated include the existing equipments ability to handle new space cooling loads and the limited space in the ceiling plenum for mechanical equipment and associated components. One important consideration of the new mechanical system is the requirement for complete system redundancy in critical spaces.

The mechanical systems currently consist of DX units. The ATC Cab is served by two DX rooftop units. These are operating as redundant systems as required by the UFC. The remaining spaces within the project scope are served by DX split systems with some of the condensers located on the roof and the remainder of the condensers located at grade. The average life expectancy of DX units is 15 years.

The DX rooftop units appear to be in good condition and are believed to have been installed around 2006. The DX split system serving room 209 also appears to be in good condition and is also believed to have been installed around 2006. The above equipment has an estimated 10 years remaining of its life expectancy.

The remainder of the DX split systems are of varying ages. The newest system appears to have been installed around 1997 with the other systems appearing to be much older. These systems are at the end or near the end of their life expectancy.

The systems serving the ATC Cab and the Flight Planning areas appear to be compliant with the UFC and would remain unchanged. The systems serving the second floor spaces do not comply with the requirements of the UFC and in some cases these systems are insufficient to meet the projected space cooling loads. It is recommended to replace these systems. Multiple system configurations were considered for the system upgrades.

The first system analyzed was multiple DX split systems with N+1 system redundancy with redundant systems sharing their respective supply duct. This system was dismissed for the lack of ceiling plenum space required for the ductwork. A ceiling ducted system will not fit in the ceiling plenum with the required system redundancy. This system would also lend itself to potential condensation leaks above the ceiling and ultimately above the electronic equipment.

A second system analyzed was DX rooftop units with N+1 system redundancy with redundant systems sharing supply and return ducts located on the roof. This system was dismissed for the lack of structural support required to add large rooftop equipment to a wood joist roof structure. The idea of adding additional structural supports to the roof was also entertained, but this option would add significant costs to the project. Additionally, this system would place the duct work on the roof in a less than ideal location (also requiring multiple duct roof penetrations).

The recommended system chosen for the system upgrades is a Variable Refrigerant Flow (VRF) system consisting of a mixture of wall mounted, ceiling mounted and ducted concealed units. This system would require two complete VRF systems to achieve the system redundancy; however, this system also addresses the

BASIS OF DESIGN

minimal ceiling plenum space for duct work and equipment, condensate leaks occurring directly above electronic equipment, and structural upgrades to the roof would not need to occur for roof mounted equipment. Additional information on this system is provided in the sections below. The demolition required for the VRF system would include the six DX split systems (all five tons or less) serving the second floor spaces.

B. Design Criteria

- International Building Code 2009
- International Mechanical Code 2009
- International Plumbing Code 2009
- NFPA 90, Standard for the Installation of Air-Conditioning and Ventilating Systems
- ASHRAE Ventilation for Acceptable Indoor Air Quality 62.1-2007
- ASHRAE Energy Standard for Buildings Except Low-Rise Residential Buildings 90.1-2007
- ASHRAE Standard 135-BACNET
- UFC 4-133-01N, Navy Air Traffic Control Facilities
- UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings
- UFC 3-400-10N, Mechanical Engineering
- UFC 3-410-02N, Heating, Ventilating, Air Conditioning and Dehumidifying Systems
- Facility Requirements Document, Radar Air Traffic Control Facility and Air Traffic Control Tower

C. Design Conditions

Outdoors:

Summer	91	°F dry bulb	Winter	20	°F dry bulb
	76	°F wet bulb			

Indoors:

Equipment Rooms					
Summer	75	°F dry bulb	Winter	68	°F dry bulb
	50	% RH		40	% RH

Office					
Summer	76	°F dry bulb	Winter	70	°F dry bulb
	50	% RH	50		50

BASIS OF DESIGN**D. Base Utilities**

Not Used.

E. Heating and Cooling System

The primary heating source for the second floor spaces will utilize two Variable Refrigerant Flow (VRF) systems (N+1 redundancy – three zones per VRF system). The VRF system will consist of a mixture of wall mounted, ceiling mounted and ducted concealed units. The block heating load is 25 MBH. The block cooling load is 13.1 tons.

A DX split system heat pump will be utilized for the office space. The block heating load is 7.3 MBH. The block cooling load is approximately 1.3 ton.

A wall mounted humidifier will be provided to maintain minimum space relative humidity in the equipment rooms. The humidifier will run under its own packaged controls to maintain space humidity at setpoint.

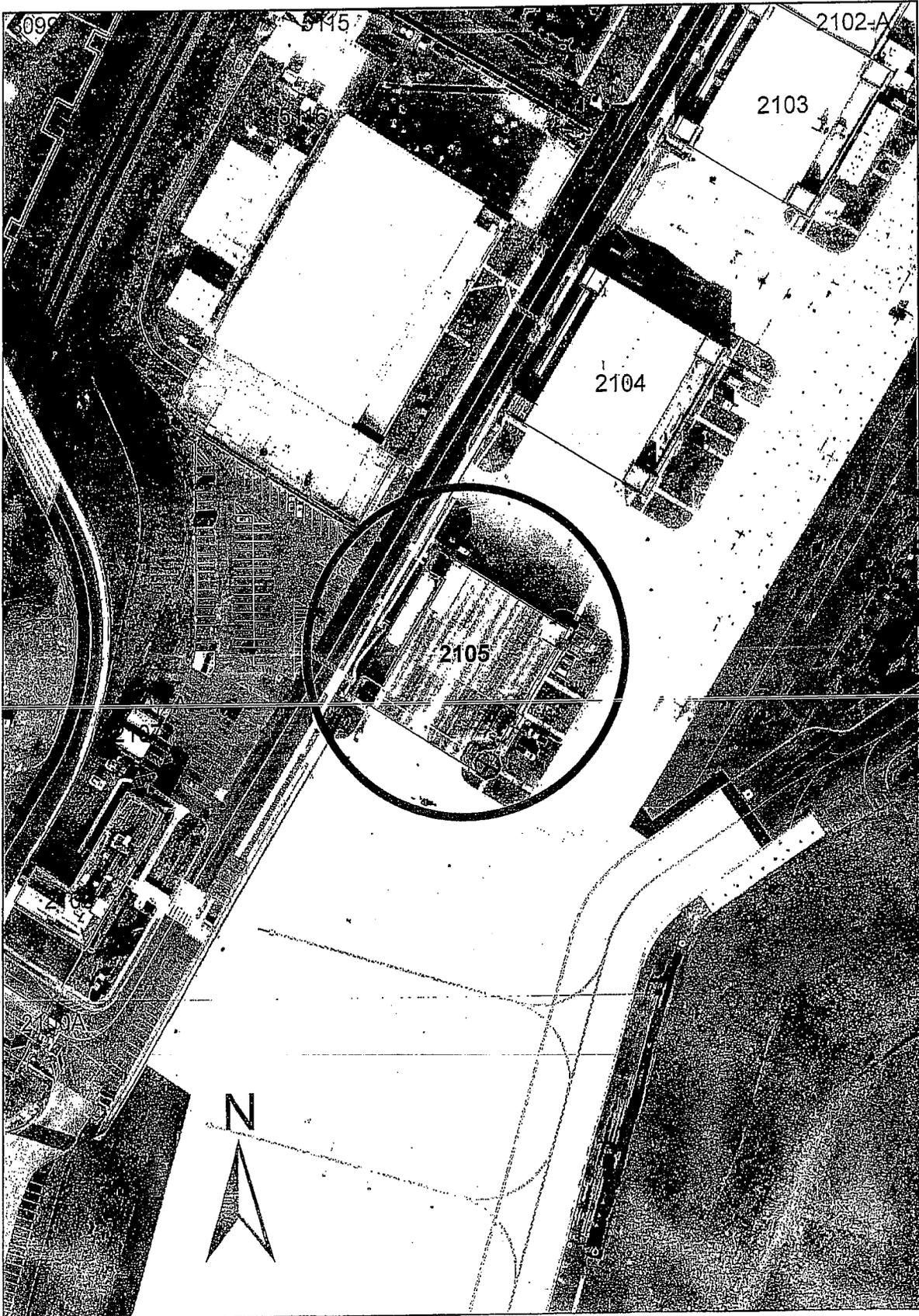
F. Ventilation System

Ventilation air will be supplied by a fixed plate energy recovery ventilator located above the ceiling. The energy recovery ventilator will temper the outside air by exchanging heat with exhaust air from the building. Tempered outside air will be supplied to the return air sides of the indoor heat pump units. Outside air and return air will be mixed at the zone equipment before being distributed. The total outside air flow rate is 140 cfm.

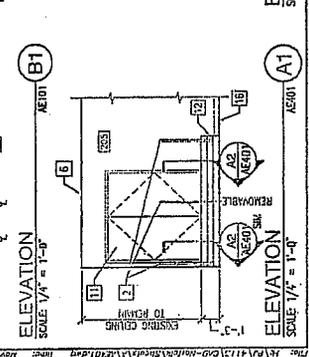
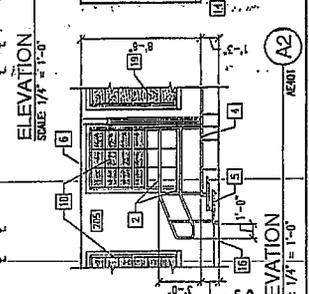
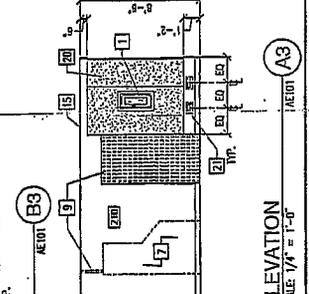
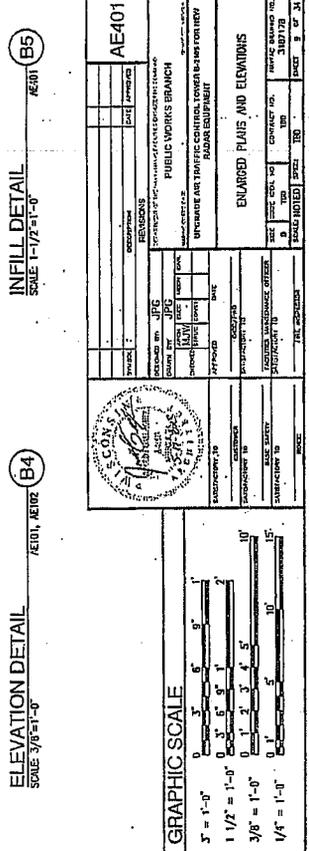
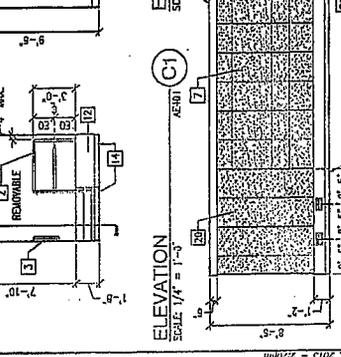
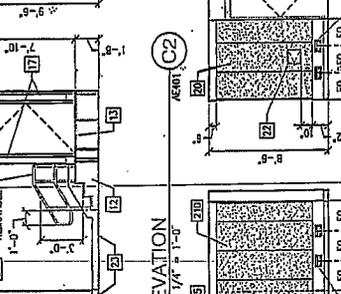
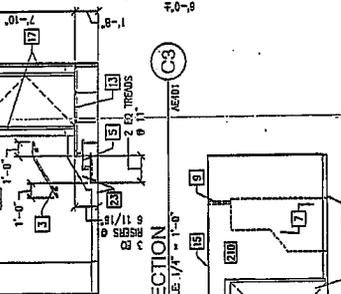
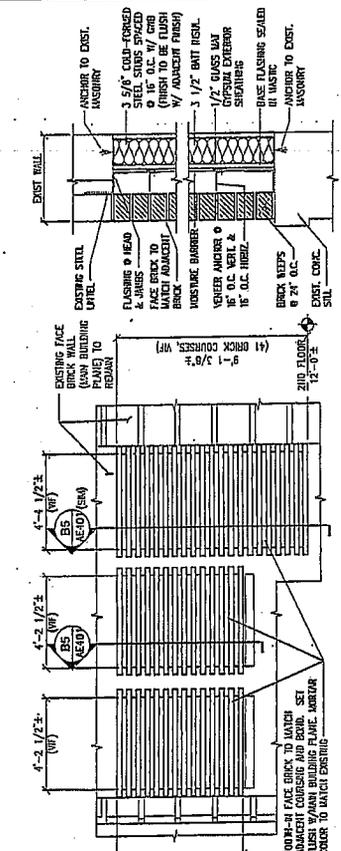
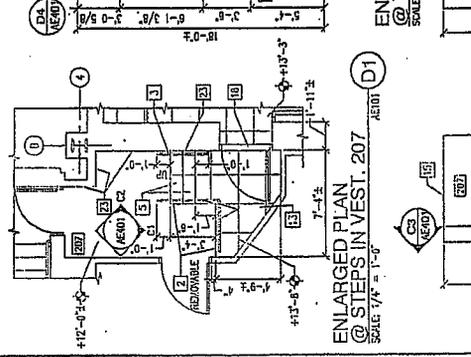
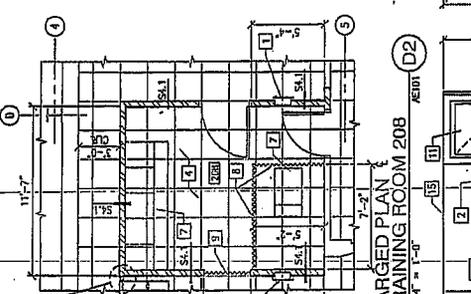
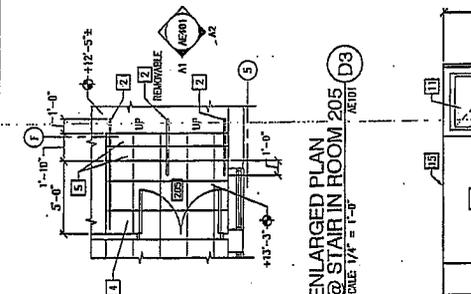
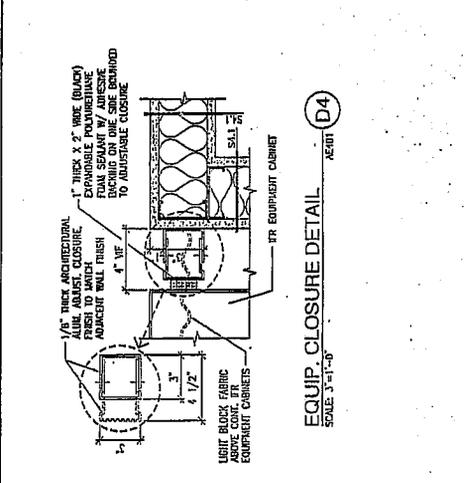
G. HVAC Control System

BACnet Direct Digital Controls (DDC) controls system will be provided for the new mechanical systems located on the second floor. The system will be required to be integrated with the existing Siemens Apogee Energy Management Control System (EMCS) at the Quantico Main Side Network Operations Center (NOC).

Upgrade Air Traffic Control Tower, B-2105 - Project Location



- NOTES**
1. FIRE EXTINGUISHER CABINET (FEC), REFER TO TYPICAL DETAIL ON SHEET A-101.
 2. 3/8" HIGH RAILING SYSTEM BY RICO CRIB ACCESS FLOOR (RAAF) WITH RAILS TO MATCH WALL & RECOMMENDED INSTALLATION DETAILS. REMOVABLE HANDRAILS TO BE ADJUSTABLE ATTACHMENT AT BASE TO BE UNREMOVABLE AND FLUSH WITH FINISHED FLOOR (FOR BASE OF EQUIPMENT REPAIRS). REFER TO TYPICAL DETAIL ON SHEET A-101.
 3. 4" W/ CARPET TILES (STAINC DISAPPEAR). REFER TO TYPICAL DETAIL ON SHEET A-101.
 4. ROCK W/ CARPET TILES (STAINC DISAPPEAR).
 5. CASES BY AIA.
 6. REFER TO TYPICAL DETAIL ON SHEET A-101.
 7. REFER TO TYPICAL DETAIL ON SHEET A-101.
 8. REFER TO TYPICAL DETAIL ON SHEET A-101.
 9. REFER TO TYPICAL DETAIL ON SHEET A-101.
 10. REFER TO TYPICAL DETAIL ON SHEET A-101.
 11. REFER TO TYPICAL DETAIL ON SHEET A-101.
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 21. REFER TO TYPICAL DETAIL ON SHEET A-101.
 22. REFER TO TYPICAL DETAIL ON SHEET A-101.
 23. REFER TO TYPICAL DETAIL ON SHEET A-101.



GRAPHIC SCALE

3" = 1'-0"

1 1/2" = 1'-0"

3/8" = 1'-0"

1/4" = 1'-0"

AE401

PROJECT: PUBLIC WORKS BRANCH

DATE: 10/15/2013

SCALE: 1/4" = 1'-0"

PROJECT NO.: 1013-2013-001

DATE: 10/15/2013

SCALE: 1/4" = 1'-0"

PROJECT NO.: 1013-2013-001

ENLARGED PLANS AND ELEVATIONS

SCALE: 1/4" = 1'-0"

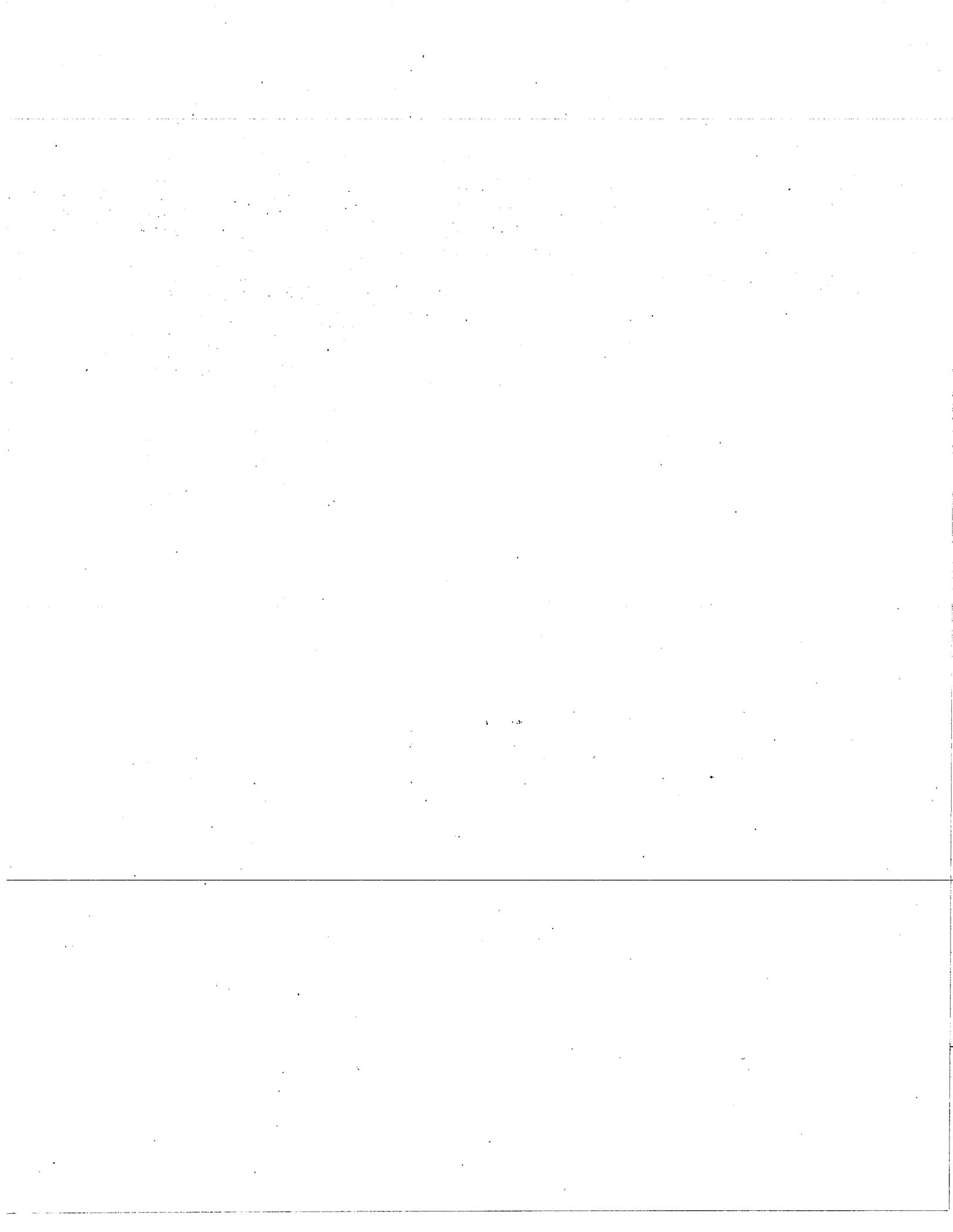
PROJECT NO.: 1013-2013-001

DATE: 10/15/2013

SCALE: 1/4" = 1'-0"

PROJECT NO.: 1013-2013-001

Project: 1013-2013-001
 Location: 1013-2013-001
 Date: 10/15/2013
 Scale: 1/4" = 1'-0"





COMMONWEALTH of VIRGINIA

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Molly Joseph Ward
Secretary of Natural Resources

Julie V. Langan
Director
Tel: (804) 367-2323
Fax: (804) 367-2391
www.dhr.virginia.gov

MEMORANDUM

DATE: 7 July 2014

DHR File # 2014-3435

TO: Ms Kate Roberts
USMC

FROM: Marc E. Holma, Architectural Historian (804) 482-6090
Office of Review and Compliance

PROJECT: MCAF radar equipment upgrades
Marine Corps Base Quantico

This project will have an effect on historic resources. Based on the information provided, the effect will not be adverse.

This project will have an adverse effect on historic properties. Further consultation with DHR is needed under Section 106 of the NHPA.

Additional information is needed before we will be able to determine the effect of the project on historic resources. Please see attached sheet.

No further identification efforts are warranted. No historic properties will be affected by the project. Should unidentified historic properties be discovered during implementation of the project, please notify DHR.

We have previously reviewed this project. Attached is a copy of our correspondence.

Other (Please see comments below)

COMMENTS: No Adverse Effect to Building 2105 with contributes to the MCB Quantico Historic District and to the Historic District as a whole.

Administrative Services
10 Courthouse Ave.
Petersburg, VA 23803
Tel: (804) 862-6408
Fax: (804) 862-6196

Capital Region Office
2801 Kensington Avenue
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

Tidewater Region Office
14415 Old Courthouse Way
2nd Floor
Newport News, VA 23608
Tel: (757) 886-2818
Fax: (757) 886-2808

Western Region Office
962 Kime Lane
Salem, VA 24153
Tel: (540) 387-5443
Fax: (540) 387-5446

Northern Region Office
5357 Main Street
PO Box 519
Stephens City, VA 226
Tel: (540) 868-7029
Fax: (540) 868-7033

Encl (3)

Record of Non-Applicability (RONA) for General Conformity

Project Name Upgrade Air Traffic Control Tower B-2105 for NAS Mod @ MCAF
Project Number 4.14177
Project Contact Gizana Kassay, R.A.

General Conformity under the Clean Air Act, Section 176(c) has been evaluated for the project described above according to the requirements of Title 40 Code of Federal Regulations (CFR) Part 93 and the applicable State Implementation Plan. The requirement of a conformity determination under this rule is not applicable to this project/action because:

The project/action qualifies as an exempt action. The applicable exemption citation is:
40 CFR 93.153(c)(2)(i) Continuing and recurring activities such as permit renewals where activities conducted will be similar in scope and operation to activities currently being conducted.
Example: 40 CFR 93.153(c)(2)(xiv) Transfers of ownership, interests, and titles in land, facilities, and real and personal properties, regardless of the form or method of the transfer.
Note: Exemptions must be contained in the State Implementation Plan.

OR

Total direct and indirect emissions from this project/action have been determined to be below the *de minimus* threshold for conformity purposes estimated at:
_____ tons/year of NOx
_____ tons/year of VOC
_____ tons/year of PM₁₀
_____ tons/year of CO₂
_____ tons/year of _____

These levels are below the conformity threshold values established at 40 CFR 93.153(b), and supporting documentation and emission estimates are:

Attached
 Appear in the NEPA Documentation _____
 Other _____

_____ Head, NEPA 27 June 14
DATE
ENVIRONMENTAL COORDINATOR (title and signature)

Encl (4)

Construction Waste Management Report
Quantico Marine Corps Base

Report Date: _____
 Project Number: _____ Project Name: _____
 Contract Number: _____ Contract Task Order/Delivery Order: _____
 Reporting Period: _____ to _____

SUBMIT THIS FORM BY FAX TO (703) 784-4953, OR BY EMAIL TO: Ronald King at ronald.king@usmc.mil or call (703) 432-0524

Comments: _____

Waste Stream	Disposal (Tons)	Disposal Cost	Recycled (Tons)	Recycled Cost	Recycled Revenues
C&D		\$		\$	\$

CONSTRUCTION & DEMOLITION DEBRIS (C&D).

- Record hazardous and non-hazardous C&D waste as one entry. Enter total tons of C&D disposed of in a landfill, by incineration, and/or by hazardous waste contract.
- Enter total disposal cost for C&D.
- Enter the recycled hazardous and non-hazardous C&D tons as one entry under the recycling column. You can also claim C&D diversion conducted by a construction contractor or MILCON project. If you have recycled C&D, it is likely that some was disposed of as well. Therefore, if there are recycled tons of C&D there should be some disposed tons of C&D.
- Enter the cost associated with recycling. Recycling costs include handling, processing, transportation, and other costs associated with recycling C&D. Soils that are used at another location or that are reclaimed count toward recycling.
- Enter Recycling Revenues. Enter only actual revenues received from recycling. Do not enter cost avoidance for recycling revenues.

Reported by: _____ Contact: _____
 Company: _____ Title: _____
 Address: _____ E-mail address: _____
 Telephone: _____ Fax: _____

Definitions:

Construction and Demolition (C&D) Debris. Waste derived from the construction, renovation, demolition or deconstruction of residential and commercial buildings and their infrastructure. C&D waste typically includes concrete, wood, metals, gypsum wallboard, asphalt, and roofing material.

Other Select Waste (OSW). Construction and demolition debris are the "Other Select Waste" categories for purposes of DoD metric reporting via SW module. If the Other Select Wastes are hazardous they must also be reported in the calendar year HW module.