ENVIRONMENTAL ASSESSMENT

FOR

THE EXPANSION OF THE MARINE CORPS INFORMATION AND OPERATIONS CENTER (MCIOC)

AT

MARINE CORPS BASE QUANTICO, STAFFORD COUNTY, VIRGINIA

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1.0 Introduction

The MCIOC, a Command of the United States Marine Corps (USMC), and tenant agency at Marine Corps Base Quantico (MCBQ), proposes to construct 60,000 sq. ft., two story building in the Hotpatch district on the Westside of the base. This action would take place in 2021.

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) P5090.2, which documents the USMC internal operating instructions on how to implement NEPA. This EA is intended to meet NEPA requirements for the Expansion of the MCIOC at MCBQ, Virginia.

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.

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 Background

The USMC’s Force 2025 is a component of the Commandant of the Marine Corps (CMC) directed, Combat Development and Integration (CDI) effort. The goal of Force 2025 is to design a Marine Corps that is organized and to adapt as well as effectively operate despite challenges such as threats, environment, or the mission. As an essential component of the naval and joint force the USMC must be organized, trained and equipped to execute all of its roles and responsibilities by 2025. The MCIOC defines Information Operations (IO) as the integration, coordination, and synchronization of all actions taken in the information environment to affect a target audience’s behavior in order to create an operational advantage for the commander. The MCIOC provides IO support to the Marine components and the Marine Air Ground Task Force (MAGTF) and provides IO subject matter

expertise in support of USMC IO advocates, and proponents of Information Operations Technology (IOT) enable the effective integration of IO into USMC operations.

1.2 Location

The proposed action would be implemented near the existing MCIOC facility that is located within the Hotpatch area on the Westside of MCBQ in Stafford County, Virginia. The proposed action footprint is located adjacent to Marine Corps Base (MCB) 1 road (Rd.) which is also referred to as Camp Barrett Rd.

2.0 Need for the Proposed Action

The purpose of the proposed action is to expand MCIOC by constructing a new administrative and storage facility. The proposed facility will consist of administration, classroom, warehouse and other support areas within the facility. The proposed action also involves constructing parking areas for a total of 230 privately owned vehicles (POV) and military vehicles, as well as an access road to MCB-1/Camp Barrett Rd. The 7.4 acre proposed action footprint will also include utility connections for water, sewer, gas and electricity as well as three information technology (IT) networks.

The need for the proposed action is to ensure that MCIOC has the ability to effectively execute its mission and meet the requirements of Force 2025 growth that the CMC has ordered. Additionally, as a result of the Force 2025, approximately 160 personnel will be added to MCIOC and the base. There is also a lack of suitable administrative facilities on the base, with 130 personnel already utilizing buildings and trailers that have been designated for demolition. The proposed action also allows for compliance with the MCBQ Base Master Plan which has the new facility planned as part of the Hotpatch Area Development Plan.

3.0 Alternatives

3.1. No Action Alternative – Alternative A

Under the No Action Alternative, Alternative A, the proposed action would not occur. The MCIOC would be confined to one facility, existing personnel would remain at older, dated facilities and the MCIOC would not be able to meet the Force 2025 requirements as outlined by the CMC.

3.2. Action Alternative – Alternative B

Under the Action Alternative, Alternative B, MCBQ and MCIOC would construct a new administrative and storage facility. The 7.4 acre footprint would include a two story building, 230 asphalt parking spaces, utility and IT connections, as well as an access road. This alternative would be implemented to ensure MCIOC can meet the requirements outlined under Force 2025. The proposed action is displayed in figures 3.1 and 3.2.

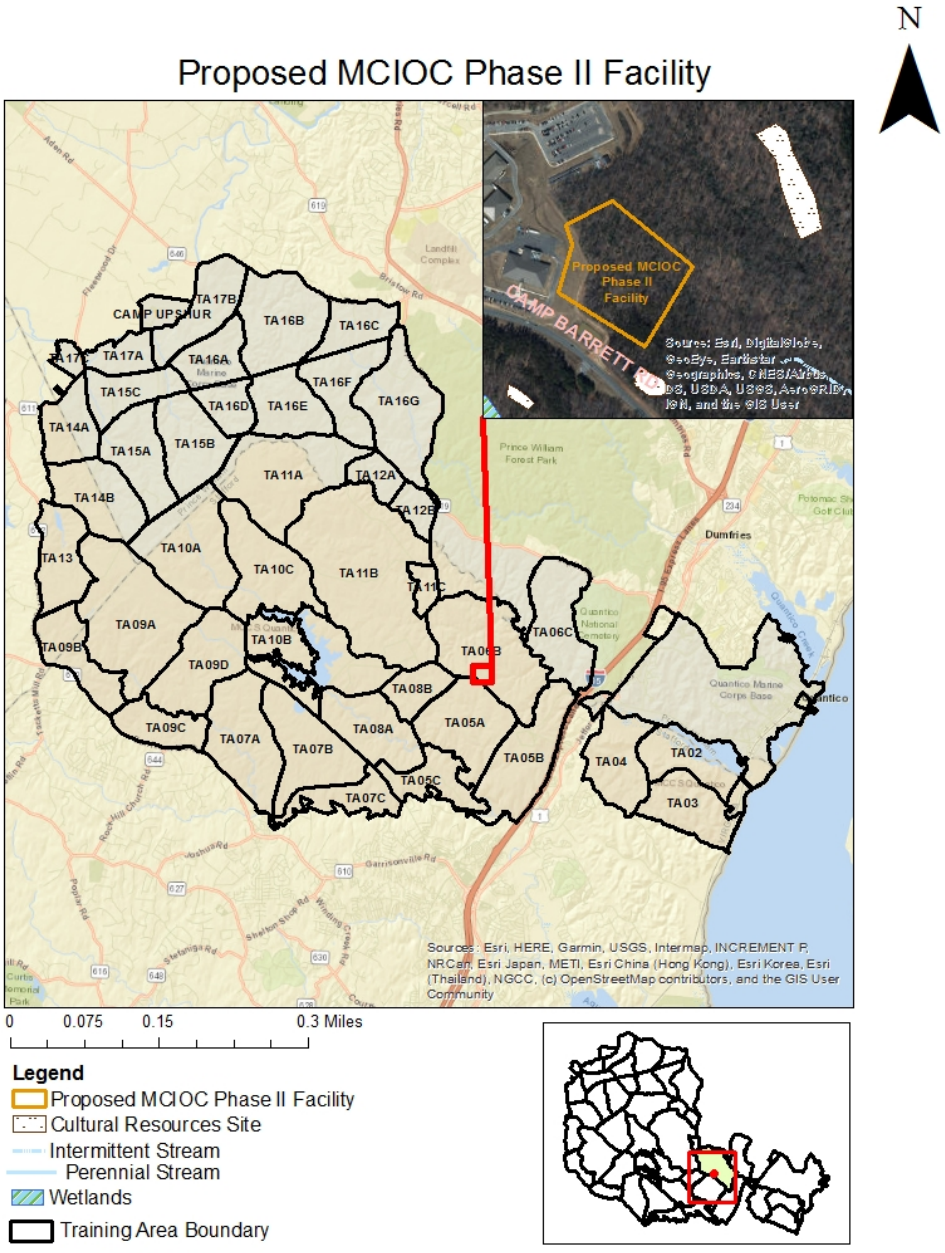


Figure 3.1

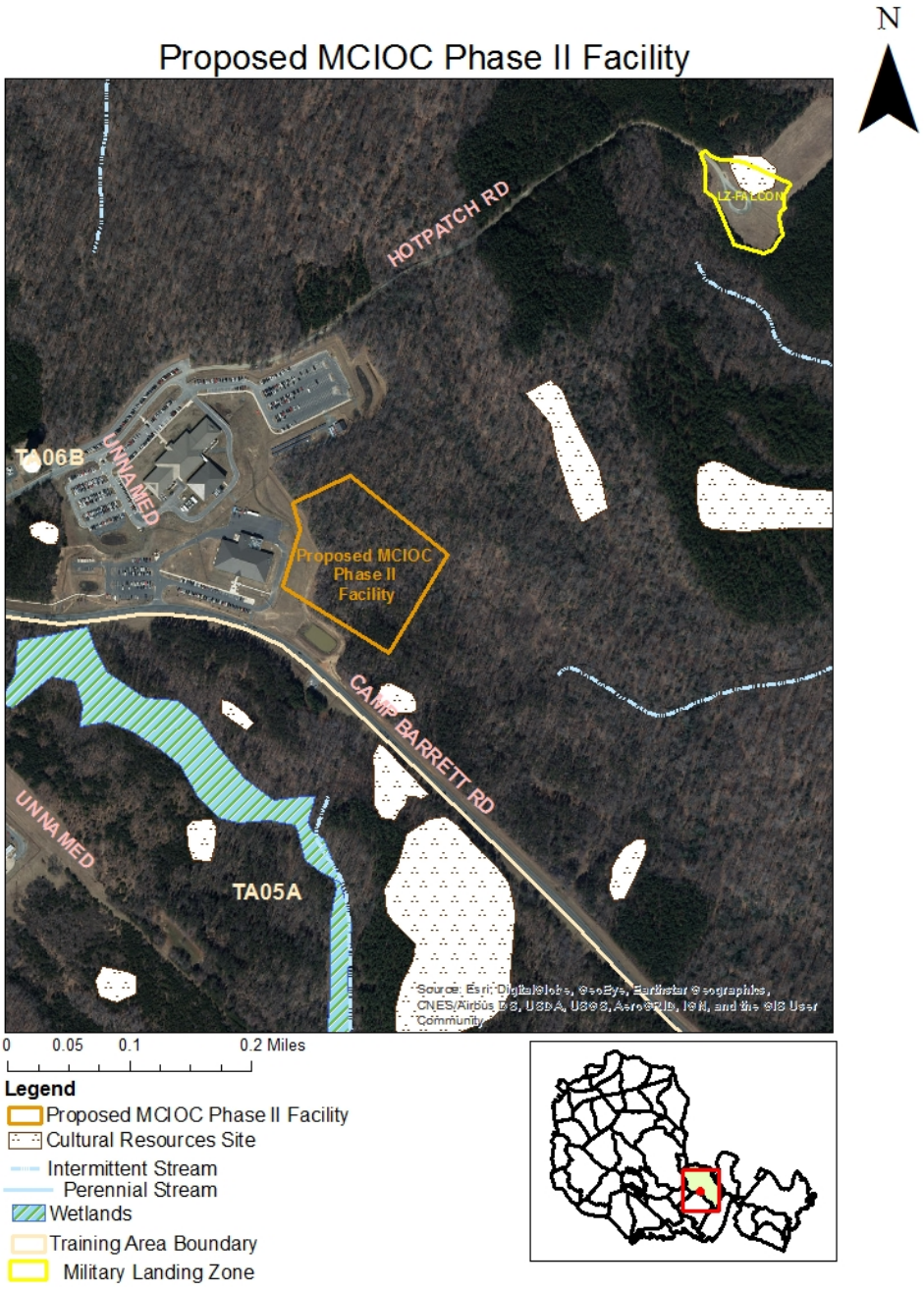


Figure 3.2

4.0 Environmental Impacts

This section presents a description of the environmental resources currently within the proposed action footprint as well as the indirect and direct effects of both alternatives. The CEQ defines direct effects as those effects that are caused by the action and occur at the same time and place (CEQ 1508.8). Conversely, indirect effects are defined by the CEQ as effects

that are caused by the action and are later in time or farther removed in distance but are still relatively foreseeable (CEQ 1508.8).

All potentially relevant environmental resource areas were initially considered for analysis in this EA. In compliance with NEPA, the CEQ, Department of the Navy (DoN), and USMC guidelines, the discussion of the affected environment (ie., existing conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact. This section includes *air quality, water resources, geological resources, cultural resources, biological resources, land use, visual resources, military training and airspace, noise, infrastructure, transportation, public health and safety, hazardous materials and wastes, socioeconomics, and environmental justice*.

Figure 4.1 summarizes resource areas that have impacts that were considered to be negligible or non-existent so they were not analyzed in detail in this EA:

Resource Area	Rational for Not Analyzing in Detail
Visual Resources	The Quantico Marine Corps Base Historic District (QMCBHD) will not be impacted by the proposed action and there will be no impacts to viewsheds as a result. Additionally, although there will be 7.4 acres of timber removed, the proposed action would be occuring near an existing MCIOC facility and the Hotpatch District. Area has significant amounts of human activity due to the proximity to other facilities most notably the Marine Corps Cyberspace Operations Group (MCCOG)
Socioeconomics	The proposed action is located within the boundary of the base.
Environmental Justice	The proposed action will not alter environmental conditions that could effect low-income, minority or children. Proposed action will be occuring completely inside of the boundary of MCBQ where these activities are common.
Infrastructure	The proposed action would result in utility connections to water, sewer, gas and electrical lines as well as the installation of 3 IT networks. However, the proposed action will not negatively overload or impact existing infrastructure.
Noise	Closest major noise generator is C-Demo, slightly less than 1 mile away. However, the noise generated by these activities are associated with existing noise that occurs in this area and on the Westside of the base. Any additional noise generated by the proposed action would be temporary and associated with construction activities and timber removal activities.
Military Training and Airspace	MCBQ Range Management Branch (RMB) coordinated with MCBQ Public Works Branch (PWB) and agreed that the proposed action would be added at part of the Base Master Plan. As a result, the proposed action is now considered part of the cantonment area. The proposed action is not located in an area that would impact the base Air Installation Compatible Use Zone (AICUZ) or restricted airspace.

Figure 4.1

4.1 Air Quality

4.1.1 Regulatory Setting

4.1.1.1 National Ambient Air Quality Standards and Criteria Pollutants

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 Clean Air Act (CAA) (42 U.S.C. §7401 et seq.) the EPA promulgated the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), 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. Stafford County has been designated as being in attainment for 8-hour ozone NAAQS and $PM_{2.5}$. NO_x and volatile organic compounds (VOCs) are precursors to ozone formation and are regulated to control ozone pollution.

4.1.1.2 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. part 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.

4.1.1.3 Permitting

New Source Review (Preconstruction Permit)

New Source Review (NSR) is a federally mandated program, implemented by the States, that requires 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 (Operating Permit)

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 proposed project would occur entirely within Stafford County, which is an ozone attainment area.

The base's NO_X PTE is well above 100 tpy. The base currently operates under a Title V permit issued by the VDEQ on 2 September 2003. Renewal applications are pending.

4.1.1.4 Greenhouse Gases

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 gas emissions that trap heat in the atmosphere (called the "greenhouse effect"). It is a natural phenomenon that can create 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). GHGs include carbon dioxide (CO_2), methane (CH_4), nitrogen oxide (NOx), hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers.

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. part 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 equivalent (CO_2e) 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 CO_2e in a year. The second set of categories includes production facilities outlined in 40 C.F.R. part 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 CO_2e 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 CO_2e 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 CO_2e or more, and the Title V threshold for GHGs is 100,000 TPY of CO_2e 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 on the basis of 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 CO_2e or more.

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.

Cutback asphalt is prohibited except when stockpile storage greater than one month is necessary, when used or applied during the months of November through March, or when used or applied as a penetrating prime or tack coat, as per 9 VAC 5-45, Article 7 of VDEQ's air pollution regulations.

Traffic making is limited to 150 grams/Liter of VOC per 9 VAC 5-45, Article 5: Emission Standards for Architectural and Industrial Maintenance Coatings. Building coatings must conform to Table 45-5A in the same rule. Additionally, adhesives and sealants must conform to the limits in Table 45-6A in 9 VAC 5-45, Article 6.

Effects on air quality are based on estimated direct and indirect emissions associated with the action alternatives. The region of influence (ROI) for assessing air quality impacts is the air basin in which the project is located,

Estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations.

4.1.2 Impacts of Alternative A – No Action

Under the No Action Alternative, Alternative A, current conditions would remain and no impacts to MCBQ air quality would occur.

4.1.3 Impacts of Alternative B – Proposed MCIOC Phase II Facility

Effects on air quality are based on estimated direct and indirect emissions associated with the action alternatives. The ROI for assessing air quality impacts is the air basin in which the project is located,

Estimated emissions from a proposed federal action are typically compared with the relevant national and state standards to assess the potential for increases in pollutant concentrations.

To ensure that MCBQ remains compliant with all state and federal air quality regulations and standards, the following guidance will be followed:

General Conformity under the CAA, Section 1.76, has not been evaluated for the proposed project because the project is located in an area of attainment of NAAQS. The project has been assessed under the NEPA. The impacts of the action are considered insignificant based on emission estimates meeting the *de minimis* definition as described in 40 CFR 93.153(b).

PAINTS, COATINGS, AND ADHESIVES

Paints, coating & adhesives are to conform to VOC requirements per Commonwealth of Virginia, State Air Pollution Control Board, Regulations for the Control and Abatement of Air Pollution, 9VAC5 Chapter 45, Consumer and Commercial Products, Part II Emission Standards, Article 5 Emission Standards for

Architectural and Industrial Maintenance Coatings and Article 6 Emission Standards for Adhesives and Sealants.

The proposed action is subject to the following Virginia regulations:

•9 VAC 5-45, Article 5 - Emission Standards for Architectural and Industrial Maintenance Coatings.

Emission Standards for Architectural and Industrial Maintenance Coatings.

Any architectural coating that is sold in a container larger than one quart must comply with the VOC emission limit in Table 45-5A.

ODOR

The proposed action is subject to the following Virginia regulations:

•9 VAC 5-40, Article 2 - 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.

FUGITIVE DUST

The proposed action is subject to the following Virginia regulations:

•9 VAC 5-40, Article 1 - 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.

CUTBACK ASPHALT

Emission Standards for Asphalt Paving Operations:

Cutback asphalt (asphalt cement that has been liquefied by blending with petroleum solvents) is prohibited except under special circumstances. The NREA APM must be consulted if the proposed action involves the use of cutback asphalt.

TRAFFIC MARKING

The VOC limit for paints used to mark traffic surfaces is 150 grams of VOC per liter of coating thinned to the manufacturer's maximum recommendation, excluding the volume of any water, exempt compounds, or colorant added to tint bases.

REFRIGERANT CONTAINING EQUIPMENT

Refrigerant Containing Equipment:

All work must be performed by a technician certified to the necessary level and in accordance with the base’s Refrigerant Management Plan and 40 CFR 82. Submit a copy of the technician’s certificate to the NREA APM prior to the start of work. Recovery of existing refrigerant:

Recover all existing refrigerant and tag it as “refrigerant recovered” prior to disposal. All applicable hazardous waste disposal and shipping regulations must be complied with. Submit a completed copy of the Refrigerant Service Order Form to the APM. A copy of the Refrigerant Service Order Form is attached.

Installation of new refrigerant containing equipment:
Submit a completed copy of the Refrigerant Equipment Reporting Form for the new refrigerant containing equipment to the APM. A non-ODS refrigerant is recommended.

After coordinating with Public Works (PW) Branch to obtain inventory tracking numbers (PW numbers), and provide a list of these numbers to the APM on the attached Refrigerant Equipment Reporting Form.

EMERGENCY GENERATOR PROCUREMENT/MAINTENANCE

Prior to ordering an emergency generator, consult with the APM NREA to discuss necessary generator specifications and emission standards. New generators must comply with all current emissions standards, including all aspects of 40 C.F.R Part 63 Subpart JJJJ. Potential emissions from emergency generators must be evaluated to determine if an air permit is required. Construction may not begin until an air permit applicability evaluation has been performed, and any necessary air permits have been issued by the Virginia Department of Environmental Quality (VDEQ). It may take VDEQ approximately 6 months to process the application. Provide the APM NREA with specifications on all equipment. The APM will estimate emissions from the project to determine if application is needed. If a permit is required, the application must be submitted to VDEQ along with a $3,300 (as of 2019) non-refundable application fee.

Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

The generator’s engine must be certified by EPA to meet the emissions standards for new, non-road, compression-ignition engines in 40 C.F.R. 60.4231, for all pollutants, for the same model year and maximum engine power. The engine certification and emissions test data must be provided to the NREA APM and National Environmental Policy Act program for approval prior to entering into purchasing agreement.

The engine must be equipped with a non-resettable hour meter.

Total hours of operation, with maintenance hours separated, must be provided to NREA on a monthly basis after installation.

The engine and control device (if applicable) must be installed and maintained in accordance with manufacturer's written instructions.

To qualify as an emergency generator, the unit can only operate when there is an "emergency". In Virginia, "emergency" is defined as:

A condition that arises from sudden and reasonably unforeseeable events where the primary energy or power source is disrupted or disconnected due to conditions beyond the control of an owner or operator of a facility including:

a. A failure of the electrical grid,

b. On-site disaster or equipment failure,

c. Public service emergencies such as flood, fire, natural disaster, or severe weather conditions, or

d. An ISO-declared emergency, where an ISO emergency is:

i. An abnormal system condition requiring manual or automatic action to maintain system frequency, to prevent loss of firm load, equipment damage, or tripping of system elements that could adversely affect the reliability of an electric system or the safety of persons or property,

ii. Capacity deficiency or capacity excess conditions,

iii. A fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel,

iv. Abnormal natural events or man-made threats that would require conservative operations to posture the system in a more reliable state, or

v. An abnormal event external to the ISO service territory that may require ISO action.

The total amount of hours an emergency generator can operate for is not more than 500 hours per year, including testing and maintenance.

“Emergency” also includes operating during brief maintenance and testing exercises. Runtime for maintenance and testing must not exceed 100 hours per calendar year. Consult the APM prior to operation for maintenance and testing purposes.

Generator Run Time

Emergency generators aboard MCBQ are limited to 500 hours of runtime. Of the 500 hour total, the emergency generator may be operated up to 100 hours per year for maintenance and testing purposes. The emergency generator should be operated as little as possible during projects due to these operating permit and regulatory requirements limiting their operation. The emergency generator should be run only to ensure proper functionality and completeness of repairs. Any additional or unnecessary runtime should be prevented.

MCBQ Environmental Standard Operating Procedures (ESOPs) 04 and 05 for emergency generator procurement and operation and maintenance should be followed at all times.

The action proponent prefers to utilize a 175kw natural gas generator and that will connect to an existing natural gas line. If the action proponent decides to instead utilize a diesel generator, all regulations pertaining to the storage of fuel must be followed and the action proponent must coordinate with the NREA Oil Storage Tank and Spill Response program.

EXTERNAL COMBUSTION EQUIPMENT AND OTHER FUEL BURNING EQUIPMENT

Prior to construction, emissions from fuel oil or natural gas fired external combustion sources (boilers, hot water heaters, or other fuel burning equipment) must be evaluated to determine if an air permit is required. Construction may not begin until an air permit applicability evaluation has been performed, and any necessary air permits have been issued by VDEQ. It may take VDEQ approximately 6 months to process the application. Provide the NREA APM with specifications on all equipment. The NREA APM will estimate emissions from the project to determine if application is needed. If a permit is required, the application must be submitted to VDEQ with a $3,300 (as of 2019) non-refundable application fee.

4.2 Water Resources

This discussion of water resources includes groundwater, surface water, wetlands, floodplains, and shorelines. This section also discusses the physical characteristics of groundwater, surface water, wetlands, floodplains, and shorelines. Wildlife and vegetation are addressed in Section 3.5, Biological Resources.

Groundwater is water that flows or seeps downward and saturates soil or rock, supplying springs and wells. Groundwater is used for water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition. Sole source aquifer designation provides limited protection of groundwater resources which serve as drinking water supplies.

Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. A Total Maximum Daily Load (TMDL) is the maximum amount of a substance that can be assimilated by a water body without causing impairment. A water body can be deemed impaired if water quality analyses conclude that exceedances of water quality standards occur.

Wetlands are jointly defined by USEPA and USACE as “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Wetlands generally include “swamps, marshes, bogs and similar areas.”

Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or coastal waters. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body. Floodplain boundaries are most often defined in terms of frequency of inundation, that is, the 100-year and 500-year flood. Floodplain delineation maps are produced by the Federal Emergency Management Agency and provide a basis for comparing the locale of the Proposed Action to the floodplains.

Shorelines can be located along marine (oceans), brackish (estuaries), or fresh (lakes) bodies of water. Physical dynamics of shorelines include tidal influences, channel movement and hydrological systems, flooding or storm surge areas, erosion and sedimentation, water quality and temperature, presence of nutrients and pathogens, and sites with potential for protection or restoration. Shoreline ecosystems are vital habitat for multiple life states of many fish, birds, reptiles, amphibians, and invertebrates. Different shore zones provide different kinds and levels of habitat, and when aggregated, can significantly influence life. Organic matter that is washed onto the shore, or "wrack," is an important component of shoreline ecosystems, providing habitat for invertebrates, soil and organic matter, and nutrients to both the upland terrestrial communities and aquatic ecosystems.

4.2.1 Regulatory Setting

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 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 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.

4.2.2 Affected Environment

4.2.2.1 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.

4.2.2.2 Surface Water

The proposed action is located within the Chopawamsic Creek watershed. This watershed occupies a total of 20,461 acres and occupies the central portion of the base. The Chopawamsic Creek watershed is a part of the Potomac River watershed which occupies a total of 9,388,800 acres across the states of Maryland, Pennsylvania, Virginia, and West Virginia. These watersheds are illustrated in Figures 4.2.1 and 4.2.2. Although, there are four intermittent streams that are located within the general area, none of those streams occur either within or near the proposed action footprint

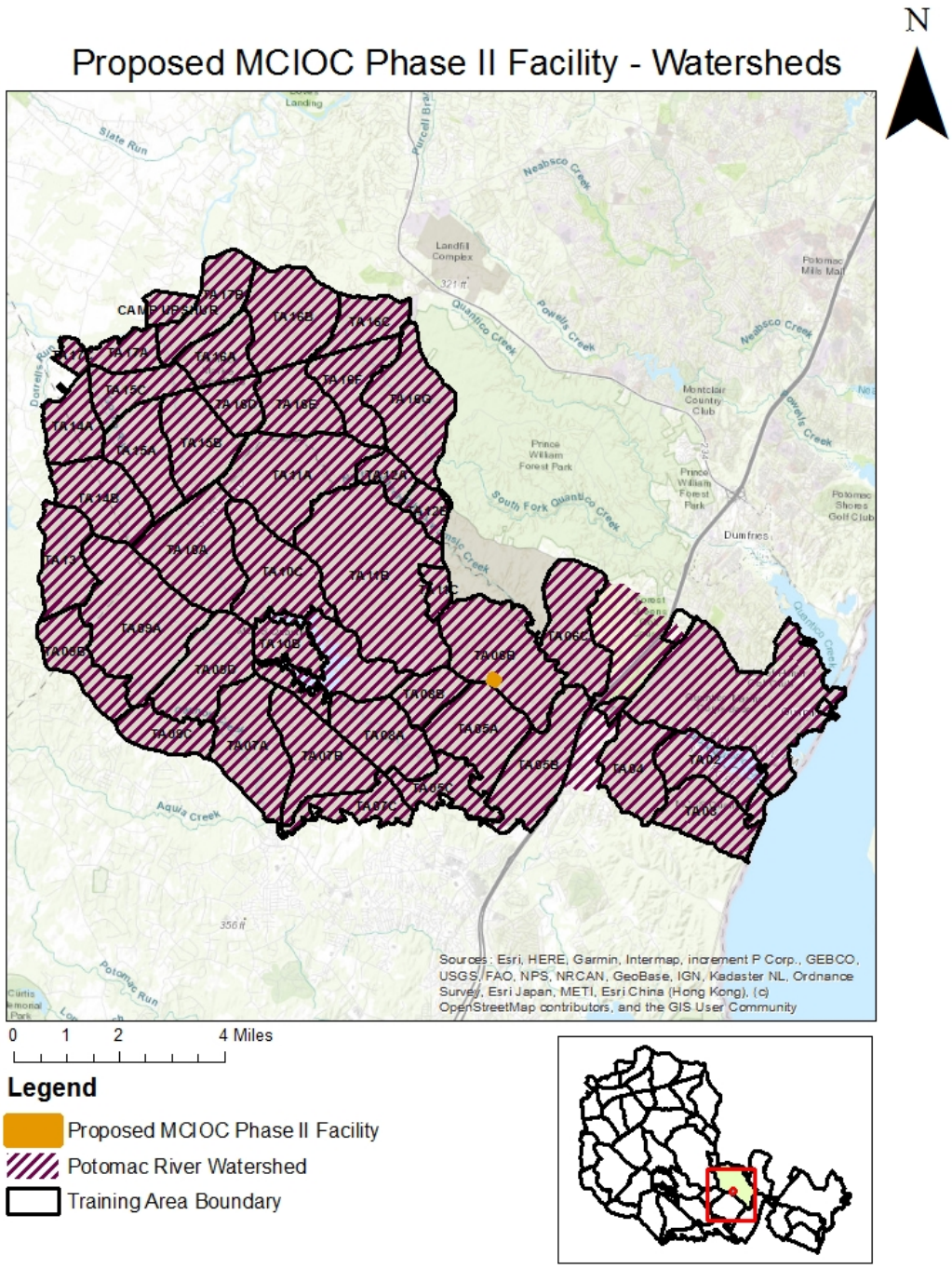

Proposed MCIOC Phase II Facility - Watersheds
N
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
0 1 2 4 Miles
Legend
Proposed MCIOC Phase II Facility
Potomac River Watershed
Training Area Boundary

Figure 4.2.1

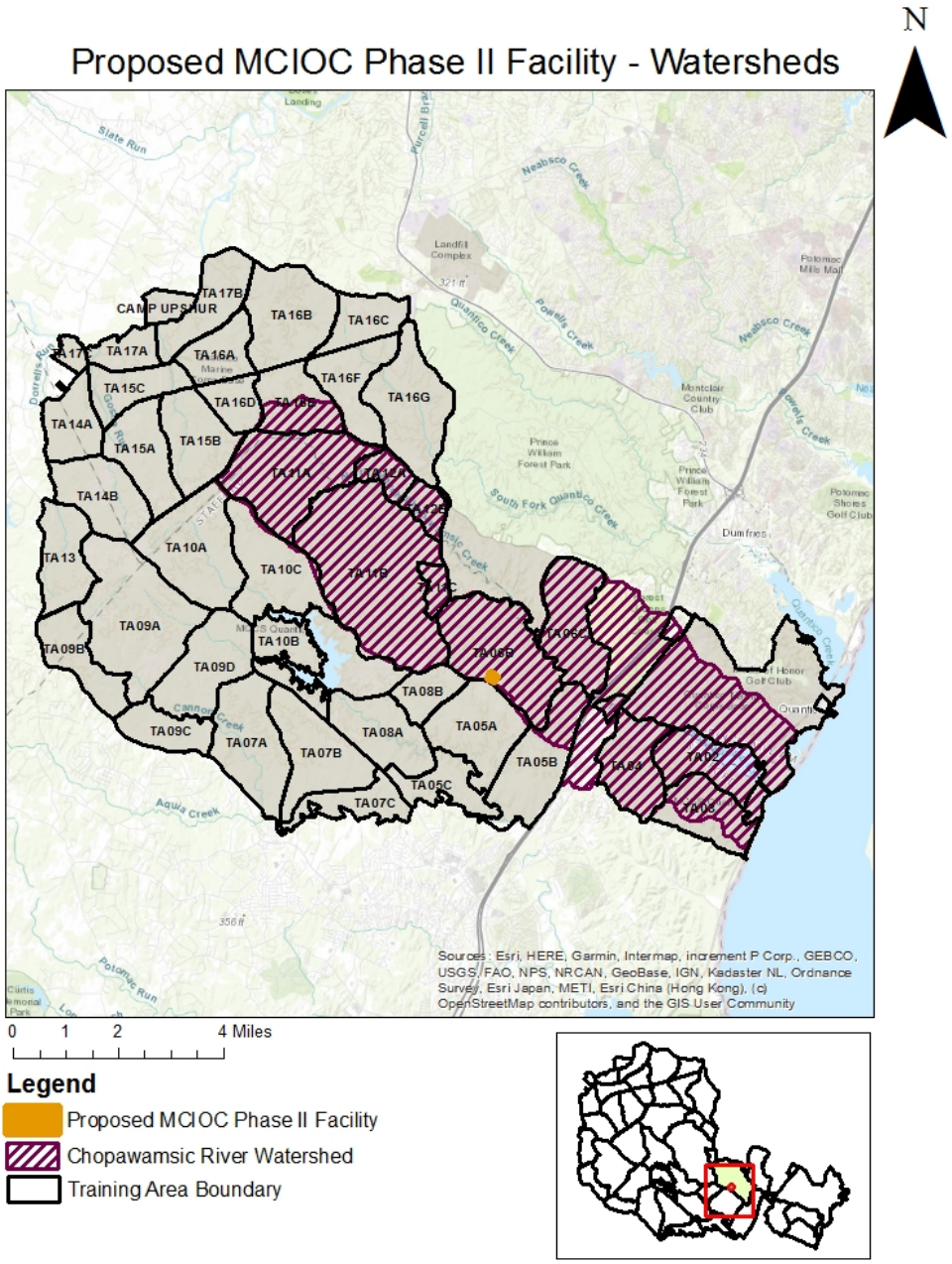


Figure 4.2.2

4.2.2.3 Wetlands

There are wetlands located to the southwest of the proposed action however these ecosystems are a significant distance from the proposed action footprint and across MCB-1/Camp Barrett Rd. (See Figure 2.2.2). Additionally, wetlands do occur along Chopawamsic Creek and its branches, however these waterbodies

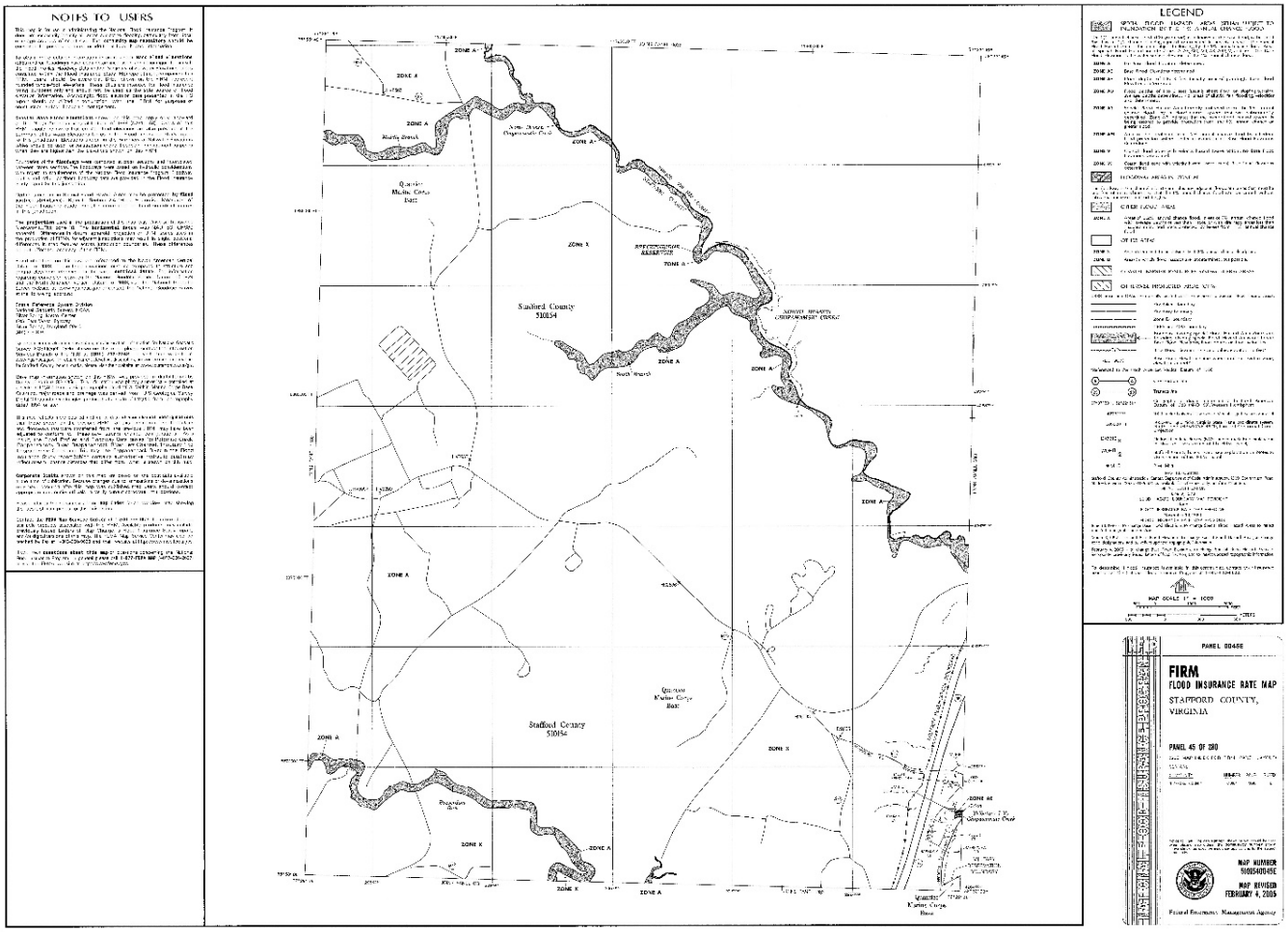
lie well outside of the proposed action location. There are no wetlands within the proposed facility footprint.

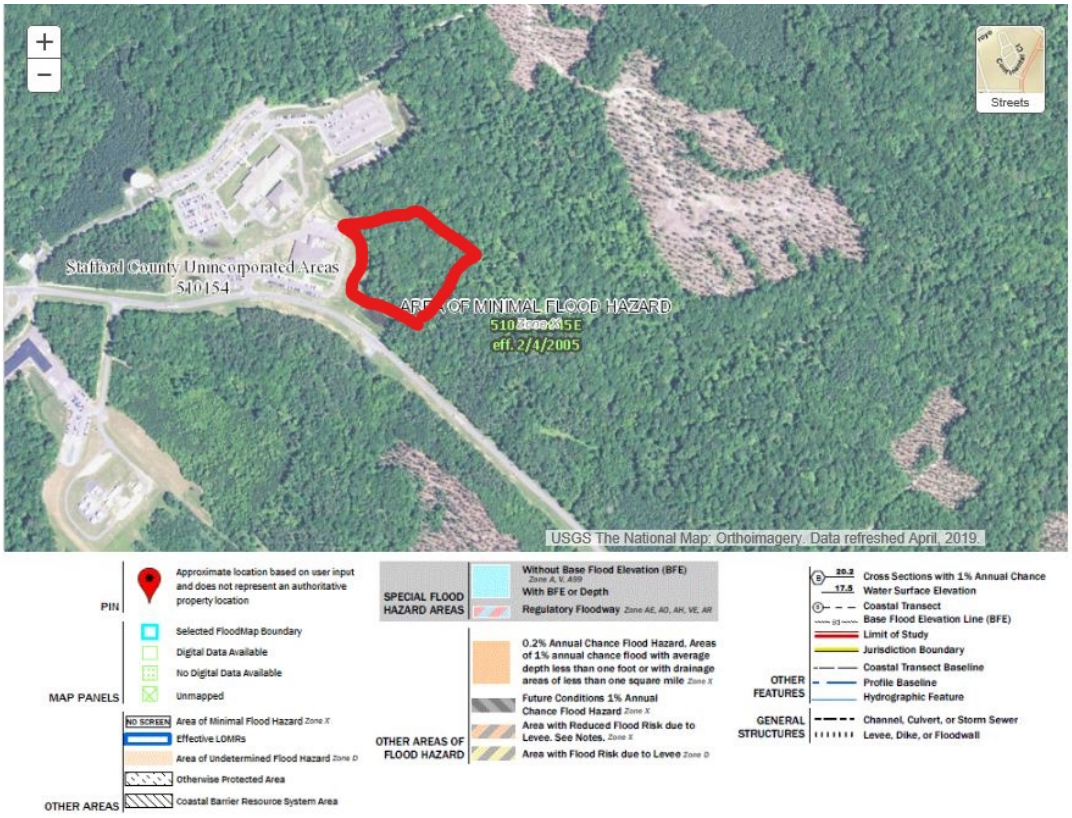
4.2.2.4 Floodplains

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 the proposed facility is depicted on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) number 5101540045E, panel 45 of 280. The FIRM shows the proposed action outside of Flood Zone A which is an area inside of the 100-year floodplain and inside of Flood Zone X which is the area of minimal flood hazard. The proposed action and its location relative to FEMA floodplain is displayed in figure 4.2.3.

FEMA Flood Hazards




Stafford County Unincorporated Areas
510154
AREA OF MINIMAL FLOOD HAZARD
510 Zone X5E
eff. 2/4/2005
Streets
USGS The National Map: Orthoimagery. Data refreshed April, 2019.
PIN
Approximate location based on user input and does not represent an authoritative property location
MAP PANELS
Selected FloodMap Boundary
Digital Data Available
No Digital Data Available
Unmapped
NO SCREEN
Area of Minimal Flood Hazard Zone X
Effective LOMRs
Area of Undetermined Flood Hazard Zone D
OTHER AREAS
Otherwise Protected Area
Coastal Barrier Resource System Area
SPECIAL FLOOD HAZARD AREAS
Without Base Flood Elevation (BFE) Zone A, V, A99
With BFE or Depth
Regulatory Floodway Zone AE, AO, AH, VE, AR
OTHER AREAS OF FLOOD HAZARD
0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
Future Conditions 1% Annual Chance Flood Hazard Zone X
Area with Reduced Flood Risk due to Levee. See Notes. Zone X
Area with Flood Risk due to Levee Zone D
OTHER FEATURES
20.2
17.5
Cross Sections with 1% Annual Chance
Water Surface Elevation
Coastal Transect
Base Flood Elevation Line (BFE)
Limit of Study
Jurisdiction Boundary
Coastal Transect Baseline
Profile Baseline
Hydrographic Feature
GENERAL STRUCTURES
Channel, Culvert, or Storm Sewer
Levee, Dike, or Floodwall

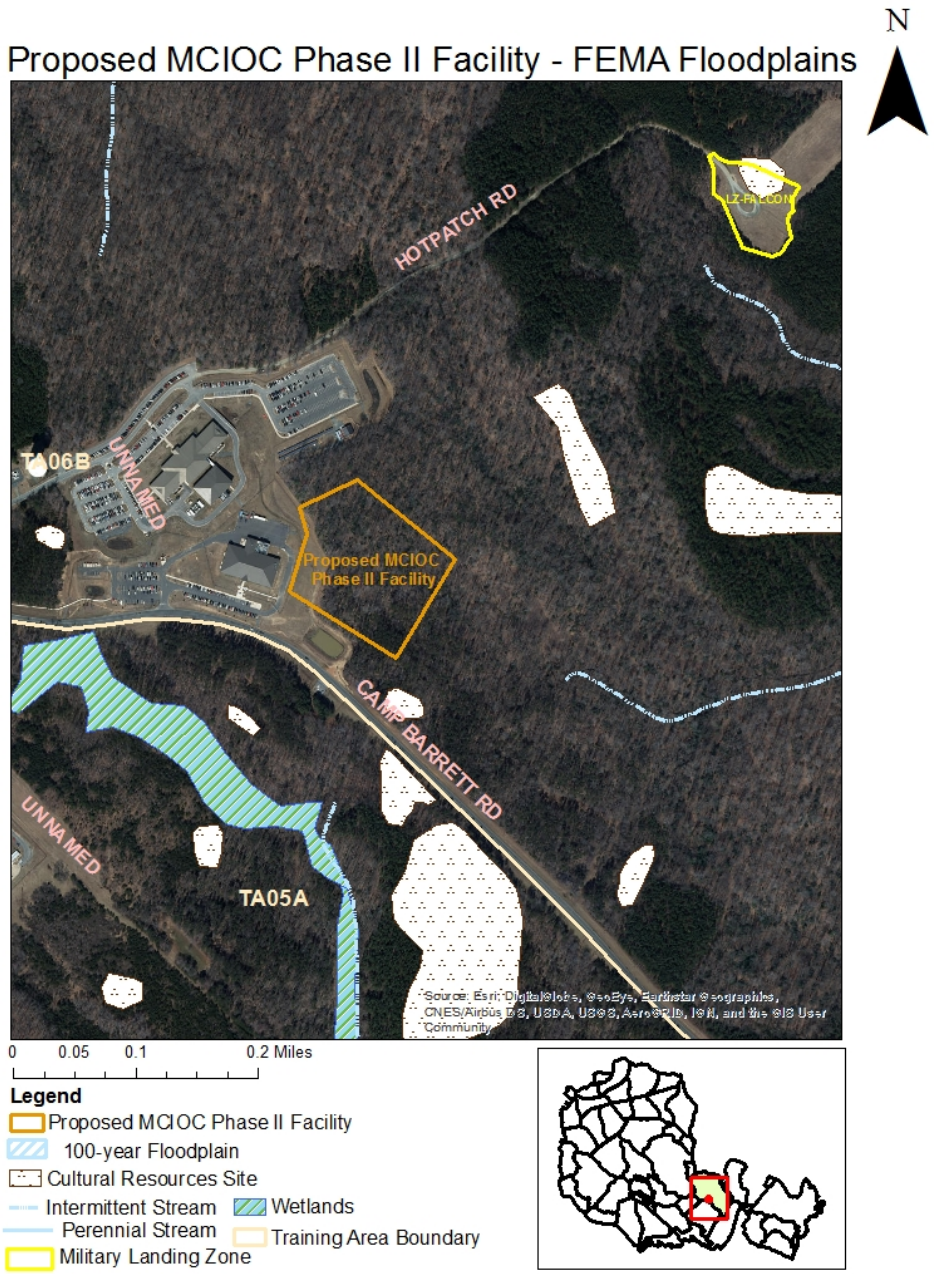


Figure 4.2.3

In this EA, the analysis of water resources looks at the potential impacts on groundwater, surface water, wetlands, and floodplains. Groundwater analysis focuses on the potential for impacts to the quality, quantity, and accessibility of the water. The analysis of surface water quality considers the potential for impacts that may change the water quality, including both improvements and degradation of current water quality. The impact assessment of wetlands considers the potential for impacts that may change the local hydrology,

soils, or vegetation that support a wetland. The analysis of floodplains considers if any new construction is proposed within a floodplain or may impede the functions of floodplains in conveying floodwaters.

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.

4.3.4 Impacts of Alternative A – No Action

It is expected that impacts to water resources would remain the same if no action is taken.

4.3.5 Impacts of Alternative B - Proposed MCIOC Phase II Facility

The proposed action, Alternative B, would create a two-story, 60,000 square ft. building with 230 parking spaces, over 900 linear ft. of 24 ft. wide access road.

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 action is 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 as well and other surface waters. Alternative B is not expected to have adverse effects on fisheries, shorelines, subaqueous lands, dunes, or coastal lands.

Potential water quality impacts associated with soil disturbance resulting from tree and vegetation removal, would be mitigated through the implementation of Best Management Practices (BMPs) per the Virginia BMP Field Guide (2009), the Virginia BMPs for Water Quality Technical Manual (2011) and the Virginia Erosion and Sediment Control Handbook (1992). The construction project will require installation of proper erosion and sediment control measures (such as proper silt fence and storm drain inlets) prior to the onset of land disturbing activities. The proper installation and maintenance of E&SC measures will minimize the movement of disturbed soils off-site and into the Potomac River watershed.

If a liquid storage tank (petroleum fuel, animal fats, or other oils) of 55 gallons or more is installed. Action proponent will contact NREA Oil Storage Tank and Spill Response program to ensure compliance with spill prevention, controls and countermeasures.

4.4 Geological Resources

This discussion of geological resources includes topography, geology, and soils.

4.4.1 Regulatory Setting

Consideration of geologic resources extends to prime or unique farmlands. The Farmland Protection Policy Act (FPPA) was enacted in 1981 to minimize the loss of prime or unique farmland due to federal actions. Farmland subject to FPPA requirements does not have to be currently used for cropland. It can be forest land, pastureland, cropland, or other land, but not water or urban built-up land. Currently, the proposed action location is not being utilized for agricultural purposes.

4.4.2 Affected Environment

4.4.2.1 Topography

The topography of the 7.4 acre proposed MCIOC expansion footprint consists of a mostly low gradient. The highest point of the footprint is 290 ft. on the northwest boundary. The terrain gradually decreases moving northwest to southeast reaching its lowest point of approximately 261 ft. at the southeast boundary of the footprint. The topographical profile of the proposed action is displayed in figure 4.4

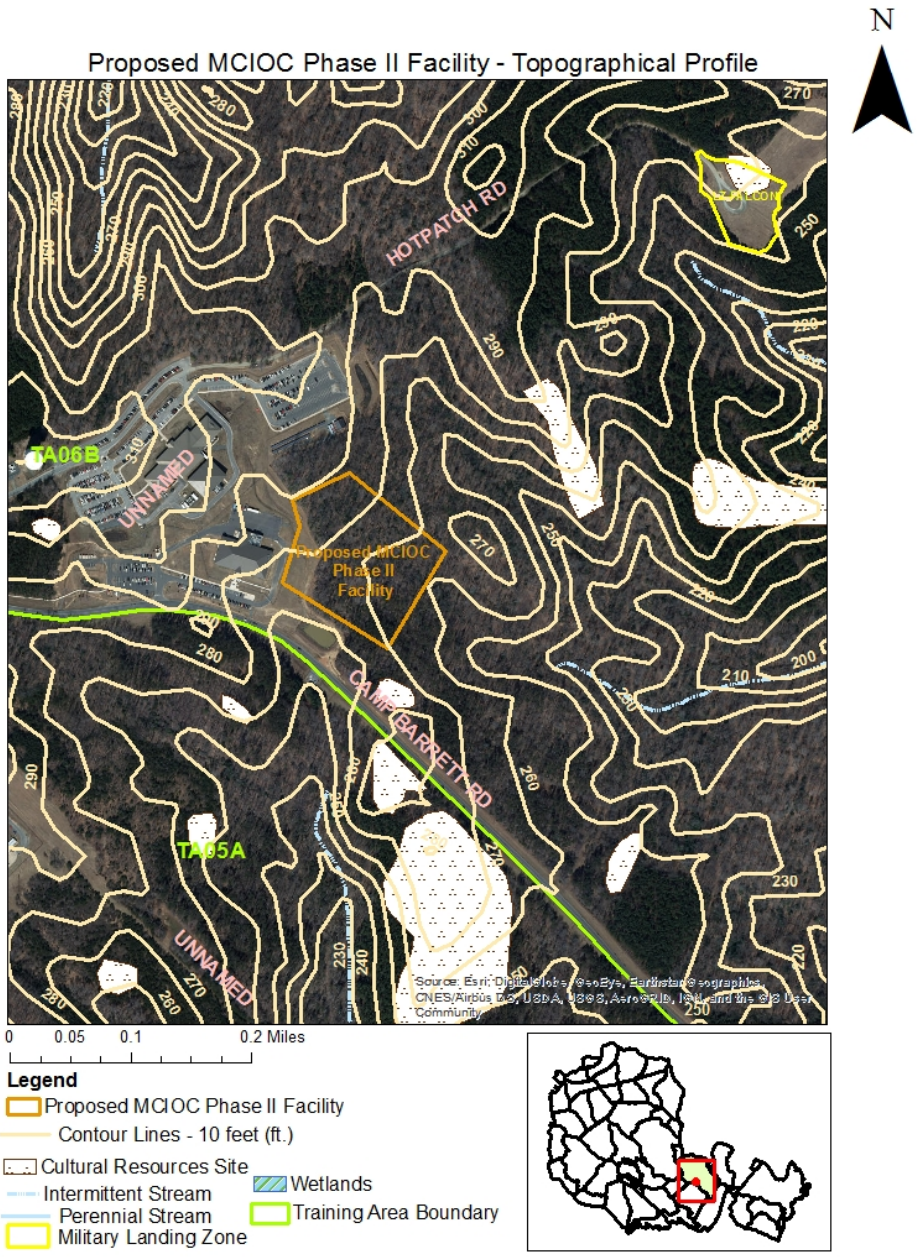


Figure 4.4

4.4.2.2 Geology

The proposed action would occur within the Westside 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.

4.4.2.3 Soils

The most dominant soil found within the proposed action footprint is the Bourne fine sandy loam, 0-2% slopes (BmA). BmA is dominant in the central as well as northwest portions of the proposed action footprint and represents 69.1% of the soil. This soil is most commonly associated with marine terraces. The profile of the BmA consists of clay, sandy clay loam and fine sandy loam. The soil is moderately well drained and does not have the ability to create significant runoff. The second most common soil type found within the proposed action location is the Bourne fine sandy loam, 2-6 slopes (BmB). This soil type is dominant in the southeast portion of the footprint and represents 23.7% of the soils that are found within the proposed action location.

BmB is most commonly associated with marine terraces and moderately sloped area. The soil's profile consists of clay, a sandy clay loam and a fine sandy loam. BmB is moderately well drained with a low probability of creating runoff. The Bertie very fine sandy loam, 0-3% slopes. (BaA) is found in the southwestern portion of the proposed action footprint and represents 6.7% of the soils found. This soil is often associated with marine terraces and prime farmland. BaA's profile consists of a loamy fine sand, clay loam, sandy clay loam and a very fine sandy clay loam. The soil is moderately well drained with a low probability of creating runoff. The least common soil within the footprint is Mecklenburg loam, 6-10 percent slopes, eroded (MkC2). MkC2 is found within a small area in the proposed action's northeast corner and comprises 0.4% of the footprint. MkC2 is associated with high quality farmland in Virginia and is found on hillsides. This soil type is moderately sloped and its profile consists of a loam and clay. MkC2 is well drained and has a moderate ability to create runoff. A soil map and a summary of the soil characteristics can be located in Appendix C.

Geological resources are analyzed in terms of drainage, erosion, and prime farmland. The analysis of topography and soils focuses on the area of soils that would be disturbed, the potential for erosion of soils from construction areas, and the potential for eroded soils to become pollutants in downstream surface water during storm events. BMPs are identified to

minimize soil impacts and prevent or control pollutant releases into stormwater. The potentially affected environment for geological resources is limited to lands that would be disturbed by any proposed facility development or demolition.

4.4.3 Alternative A – No Action

Under the No Action Alternative, Alternative B would not occur and there would be no change to baseline geology, topography, or soils. Therefore, no significant impacts to geological resources would occur with implementation of the No Action Alternative.

4.4.4 Alternative B - Proposed MCIOC Phase II Facility

The study area encompasses the proposed project area related to the preferred alternative.

To prevent the loss or movement of soils from the disturbed areas, E&SC measures would be implemented during construction. Approximately 7.4 acres of land would be disturbed to implement Alternative B. With implementation of proper E&SC measures, the action alternative is not expected to significantly impact on-site or area soils. E&SC plans and stormwater pollution prevention plans (SWPPP) are required to be submitted to the Water Program Manager, NREA Branch, MCBQ at least 120 days prior to work starting on the project.

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.

4.5 Cultural Resources

This discussion of cultural resources includes prehistoric and historic archaeological sites; historic buildings, structures, and districts, and physical entities and human-made or natural features important to a culture, a subculture, or a community for traditional, religious, or other reasons. Cultural resources can be divided into three major categories:

- Archaeological resources (prehistoric and historic) are locations where human activity measurably altered the earth or left deposits of physical remains.
- Architectural resources include standing buildings, structures, landscapes, and other built-environment

resources of historic or aesthetic significance.

- Traditional cultural properties may include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

4.5.1 Regulatory Setting

Implementation of the proposed action must comply with the National Historic Preservation Act (NHPA) of 1966, (54 U.S.C. §300101 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 54 U.S.C. §§306101(a) and 306102 (Section 110), the identification and evaluation of any cultural resources on federal property that meet the eligibility criteria of the NRHP is required.

4.5.2 Affected Environment

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.

4.5.2.1 Archaeological Resources

Although there are archaeological resources located near the proposed MCIOC Phase II expansion, there are no cultural resources within the proposed expansion footprint.

Analysis of potential impacts to cultural resources considers both direct and indirect impacts. Direct impacts may be the result of physically altering, damaging, or destroying all or part of a resource, altering characteristics of the surrounding environment that contribute to the importance of the resource, introducing visual, atmospheric, or audible elements that are out of character for the period the resource represents (thereby altering the setting), or neglecting the resource to the extent that it deteriorates or is destroyed.

4.5.3 Alternative A – No Action

Alternative A would result in current conditions remaining the same. Archeological resources would not be impacted.

4.5.4 Alternative B - Proposed MCIOC Phase II Facility

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 NRHP, prior to the expenditure of funds on the action. Under NHPA 54 U.S.C. §§306101(a) and 306102 (Section 110), the identification and evaluation of any cultural resources on federal property that meet the eligibility criteria of the NRHP is required. In 2017, MCBQ and the Virginia State Historic Preservation Office (SHPO) signed a Programmatic Agreement for a streamlined review process allowing the MCBQ Cultural Resources Manager (CRM) to expedite reviews for projects where impacts are deemed to be minor or non-existent in scope. The MCBQ CRM has reviewed the proposed action per the Programmatic Agreement between the United States Marine Corps and the SHPO and has determined pursuant to the streamlined review process that Alternative B as planned would have no effect on archaeological or historic resources.

Potential Impacts

Although Alternative B will not impact cultural resources, guidance still must be followed. For excavations permitted where there are no known archaeological sites or cemeteries, caution must still be used by contractors. 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 construction 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 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 7.0 of this EA
- Redesign project to avoid remains, if possible
- The 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 (ACHP) guidelines.

4.6 Biological Resources

Biological resources include living, native, or naturalized plant and animal species and the habitats within which they occur. Plant associations are usually referred to as vegetation, and animal species as wildlife. Habitat can be defined as the resources and conditions present in an area that support a plant or animal.

Within this EA, biological resources are divided into three major categories: (1) vegetation, (2) terrestrial wildlife, and (3) aquatic wildlife. Threatened, endangered, and other special status species are discussed in their respective categories.

4.6.1 Regulatory Setting

Special-status species, for the purpose of this EA, are those species listed as threatened or endangered under the Endangered Species Act (ESA) and species afforded federal protection under the Migratory Bird Treaty Act (MBTA).

The 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.

The 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), the DoD and USFWS set forth a Memorandum of Understanding (MOU) to promote the conservation of migratory birds and their habitats.

Bald eagles (*Haliaeetus leucocephalus)*, which are afforded federal protection under the MBTA and the Bald and Golden Eagle Protection Act (BGEPA) of 1940, as amended (16 U.S.C. §668-668d, 54 Stat. 250), and are listed as a species of concern in the USFWS Birds of Conservation Concern, 2008, are discussed within the Terrestrial Wildlife section (3.5.2.2) of this EA.

Marine Corps Order P5090.2, 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 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 among boulders within gravel or sand.

4.6.2 Affected Environment

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.

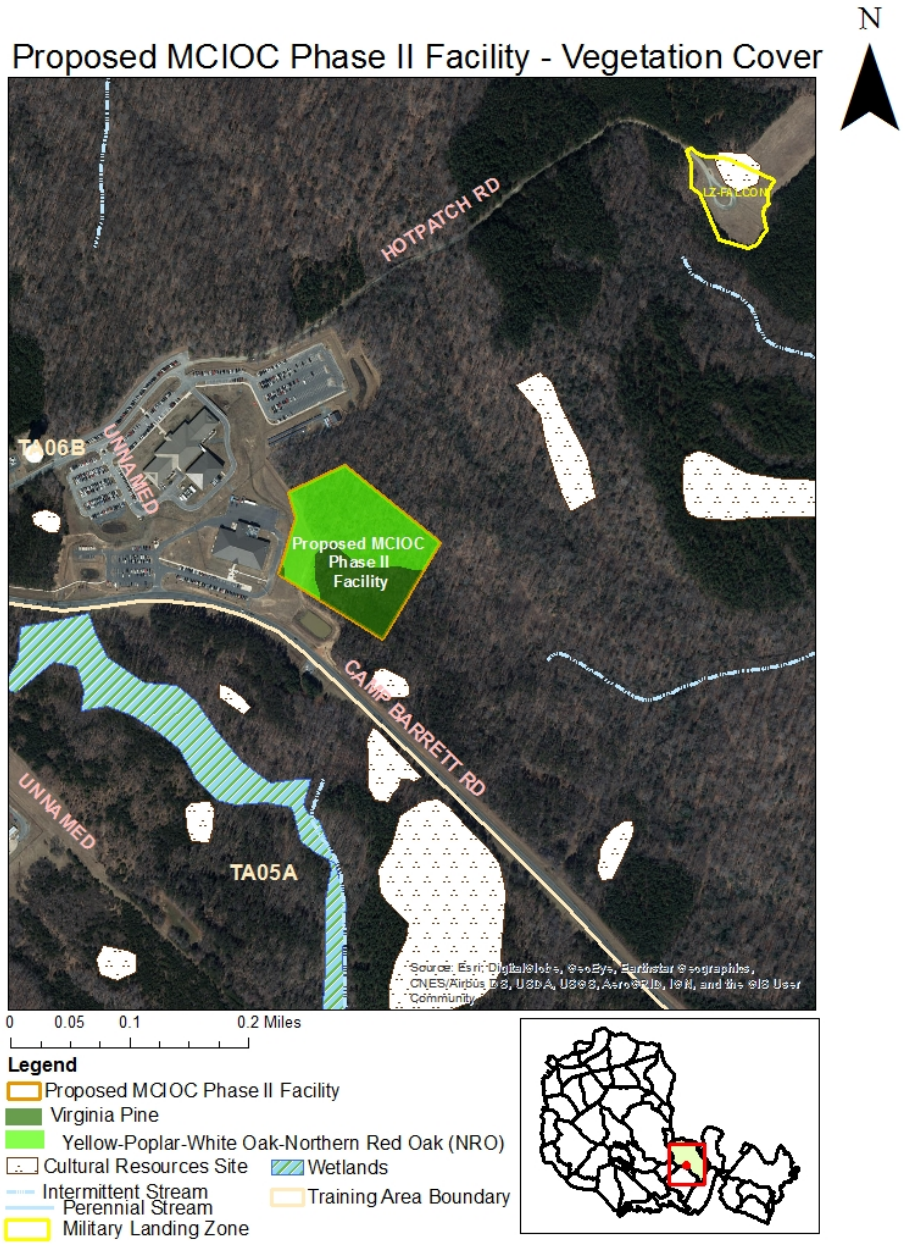
Migratory birds utilize a variety of habitats available throughout MCBQ including forestland, grassland, wetland, and riparian corridors.

4.6.2.1 Vegetation

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

The land area of MCBQ is primarily covered by a forested landscape. Forests account for approximately 90% of the land cover of the base. MCBQ is located within an ecological transition zone inside the Eastern Deciduous Forest Biome of the United States. The major tree types found within the forests, particularly on the Westside of the base, are associated with the Central and Southern forest regions of the United States. The most common tree species found at MCBQ are yellow poplar *(Liriodendron tulipifera)*, black oak *(Quercus velutina)*, northern red oak (NRO) *(Quercus rubra*), white oak *(Quercus alba)*, shortleaf pine *(Pinus echinata)*, Virginia pine *(Pinus virginiana)* and loblolly pine (Pinus taeda). Other species found on the base include sweet gum *(Liquidambar styraciflua)*, red maple *(Acer rubrum)*, American beech *(Fagus grandifolia)*, hickory *(Carya sp.)*, red cedar *(Juniperus virginiana)*, black walnut *(Juglans nigra)*, black cherry *(Prunus serotina)* and bigtooth aspen *(Populus gradidentata)*. If there is an undisturbed clear space, the most likely species to grow in that space is Virginia pine.

The species that are present within the proposed action footprint mirrors the species that are found on the base. 65% of the species within the proposed action consists of yellow poplar, white oak and NRO. 35% of the tree species that are present within the proposed action footprint consists of Virginia pine. Other tree species present included American beech, red maple and American holly *(Ilex opaca)*. The vegetation present within the proposed action is summarized in figure 4.6.1.



Vegetation Cover for Proposed MCIOC Phase II Building	
Virginia Pine	**Yellow Poplar-White Oak-NRO**
35%	65%

Figure 4.6.1

Three plant species on MCBQ are federally-listed as threatened or endangered species. These are Harperella (*Ptilimnium nodosum*), small whorled pogonia *(Isotria medeoloides)* and the sensitive joint-vetch *(Aeschunomene 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. Loamy soils that could potentially support SWP are located within the proposed action footprint (see Appendix B).

The sensitive joint-vetch is a federally-threatened annual legume that is native to the eastern U.S. The plant usually reaches a height of about 3-6 ft. in a growing season however it may grow as tall as 8 ft. The flowers are usually yellow, streaked red and the fruit is a pod that becomes brown when ripe. The plant inhabits the outer portions of marshes or shorelines that flood twice a day.

4.6.2.2 Terrestrial Wildlife

The Indiana bat (Myotis sodalis) is a terrestrial species that is potentially found at MCBQ and is federally-listed as endangered. The Indiana bat can be found over most of the eastern half of the U.S. The bat spends winter hibernating in caves and occasionally in abandoned mines (hibernacula). During summer, the bats prefer to roost under the peeling bark of dead and dying trees. The Indiana bat has been detected at MCBQ however there are no known Indiana bat maternity colonies, summer roosts or hibernacula on MCBQ.

The northern long-eared bat (*Myotis septentrionalis*) (NLEB) is also found on MCBQ. The NLEB is federally-listed as threatened. The bat spends winter hibernating in caves and mines (hibernacula). They prefer roosting sites with constant temperatures, high humidity, and no air currents. In summer, they prefer roosts under tree bark, in cavities or in crevices of both live and dead trees, and rarely in man-made structures such as barns or sheds (50 C.F.R. part 17). The NLEB was detected at MCBQ starting in 2016. Additionally, one male NLEB was caught via mist netting in July 2018 and one male caught via mist netting in July 2019 at MCBQ. There are no known NLEB maternity colonies or hibernacula on MCBQ or within the proposed action footprint.

The little brown bat (*Myotis lucifugus*) and the tri-colored bat (*Perymyotis subflavus*) are listed as state-endangered. There are no known little brown bat or tri-colored bat winter

hibernacula, summer roosts, or maternity colonies on MCBQ.

The bald eagle was removed from the Federal List of Endangered and Threatened Wildlife and Plants in 2007 due to population recovery. Additionally, removal of overstory trees may not occur within 300 ft. of a nest. The BGEPA requires a buffer of 660 feet around a nesting site. There are no bald eagle nests either within or near the proposed action location.

4.6.2.3 Aquatic Wildlife

Invertebrates

The yellow lance *(Elliptio lanceolata),* is a freshwater mussel species that is federally-listed as threatened. The species is often found within clean, coarse and medium sand, but also occasionally within gravel substrates. The yellow lance can be found in waterways ranging from medium-sized rivers to small streams and it requires clean, moderately flowing water as part of its habitat. It has known populations within the Rappahannock, James, York and Chowan Rivers in Virginia. The species is believed to no longer populate the Potomac River.

The dwarf wedgemussel *(Alasmidonta heterodon),* historically found on portions of MCBQ, is federally-listed as endangered. It is a small bivalve that lives in freshwater streams and requires highly oxygenated and silt-free waters.

This following analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem or are protected under federal or state law or statute.

4.6.3 Impacts of Alternative A – No Action

Under Alternative A, the proposed project would not occur and there would be no change to biological resources. Therefore, no significant impacts to biological resources would occur with implementation of the No Action Alternative.

4.6.4 Impacts of Alternative B

Initial consultation with the USFWS was submitted through their Information for Planning and Consultation (IPaC) online system.

On 5 June 2019, a SWP survey was completed for Alternative B by NREA Natural Resources biologists. Although there was potential habitat were found within the proposed action footprint, the SWP

was not present. As a result, Alternative B is not likely to adversely affect the federally-threatened SWP.

The dwarf wedgemussel, sensitive joint-vetch, and harperella are not found in area that would be affected by implementation of Alternative B.

Bat surveys are performed annually at MCBQ. Two federally listed and two state listed bat species were detected on the base during the surveys. The proposed action is not located within or near critical habitat for the federally-endangered Indiana bat as well as the federally-threatened NLEB. MCBQ will adhere to the more stringent Indiana bat time of year restriction (TOYR) from 15 April – 15 September, inclusive, to minimize any potential impacts to both bat species. This includes both species active pup season. During this time, no tree removal will occur. All tree removal will be performed outside of the TOYR. If a maternity colony or hibernacula for any state or federally listed bat species is encountered during timber removal activities, the project proponent must cease all timber removal activities and contact their contracting representative and NREA.

The state-endangered Virginia piedmont waterboatman and brook floater are not found in area that will be impacted by the proposed action.

4.7 Land Use

This discussion of land use includes current and planned uses and the regulations, policies, or zoning that may control the proposed land use. The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, labels, and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often include residential, commercial, industrial, agricultural, institutional, and recreational.

4.7.1 Regulatory Setting

In many cases, land use descriptions are codified in installation master planning and local zoning laws. Marine Corps Order (MCO) 11010.16 provides guidance administering the Air Installation Compatible Use Zone (AICUZ) program, which recommends land uses that are compatible with noise levels, accident potential, and obstruction clearance criteria for military airfield operations. MCO 3550.11 provides guidance for a similar program, Range AICUZ (RAICUZ). This program includes range safety and noise analyses, and provides land use recommendations which will be compatible with Range Compatibility Zones and noise levels associated with military range operations.

4.7.2 Affected Environment

The following discussions provide a description of the existing conditions for each of the categories under land use resources at MCBQ.

4.7.2.1 Land Use Compatibility

MCBQ is divided into two areas; Mainside, 6,000 acres east of Interstate 95 and U.S. Route 1, and Westside (Guadalcanal), 53,200 acres west of the same highways. The proposed MCIOC Phase II expansion would be constructed within TA6B on the Westside of the base. The proposed action is located west of the MCBQ Growth Boundary, meaning that any land use approved in this area must be compatible with training activities. TA6B is approximately 2,659 acres and consists of 7.2 miles of roads, firebreaks and trails. The TA consists of primarily forested landscape. Two significantly developed areas, the Hotpatch district and the Ammunition Supply Point, exist in this TA. Facilities and commands within the Hotpatch district cantonment area are involved with supporting the MCIOC and the Marine Corps Cyberspace Operations Group (MCCOG). Currently, a Mini Mart is being constructed within the district.

The location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. Factors affecting a proposed action in terms of land use include its compatibility with on-site and adjacent land uses, restrictions on public access to land, or change in an existing land use that is valued by the community.

Other considerations are given to proximity to a proposed action, the duration of a proposed activity, and its permanence.

4.7.3 Alternative A – No Action

If the no action alternative, was the selected alternative, no changes to land use would occur. The 7.4 acres of forested land near the existing MCIOC facility would remain.

4.7.4 Alternative B

Hunting and hiking areas do not exist within or adjacent to the Alternative B footprint. Hunting is banned in the Hotpatch district and immediate adjacent locations. The nearest hiking trail to Alternative B is on the opposite side of Camp Barrett Rd./MCB-1 in a heavily forested location adjacent to the MCBQ Fuel Farm. Alternative B will not impact existing recreational activities. Additionally, the Hotpatch district is previously disturbed and Alternative B will be located adjacent to the district and become a component of it. As a result the proposed action is compatible with existing land uses on the Westside of the base.

4.8 Transportation

This discussion of transportation includes all of the air, land, and sea routes with the means of moving passengers and goods. A transportation system can consist of any of the following: roadways, bus routes, railways, subways, bikeways, trails, waterways, airports, and taxis, and can be looked at on a local or regional scale.

4.8.1 Regulatory Setting

EO 13693 encourages the coordination of federal real property discussions with local communities in an effort to encourage planned transportation investments that aim to support public transit access.

4.8.2 Affected Environment

The proposed action is located adjacent to Camp Barrett Rd./MCB-1. The proposed action is also located adjacent to parking lots and access roads that serve the existing MCIOC and MCCOG facilities. In 2017, Naval Facilities Engineering Command (NAVFAC) performed a traffic study for the Hotpatch Rd./MCB-1/MCB-2 intersection. In 2017, the vehicle to capacity (v/c)

ratio at the intersection was 1.04 at peak morning hours (7:00AM – 8:00AM) and 1.64 at peak evening hours (4:00PM – 5:00PM). Figure 4.8.1 summarizes the results of that study.

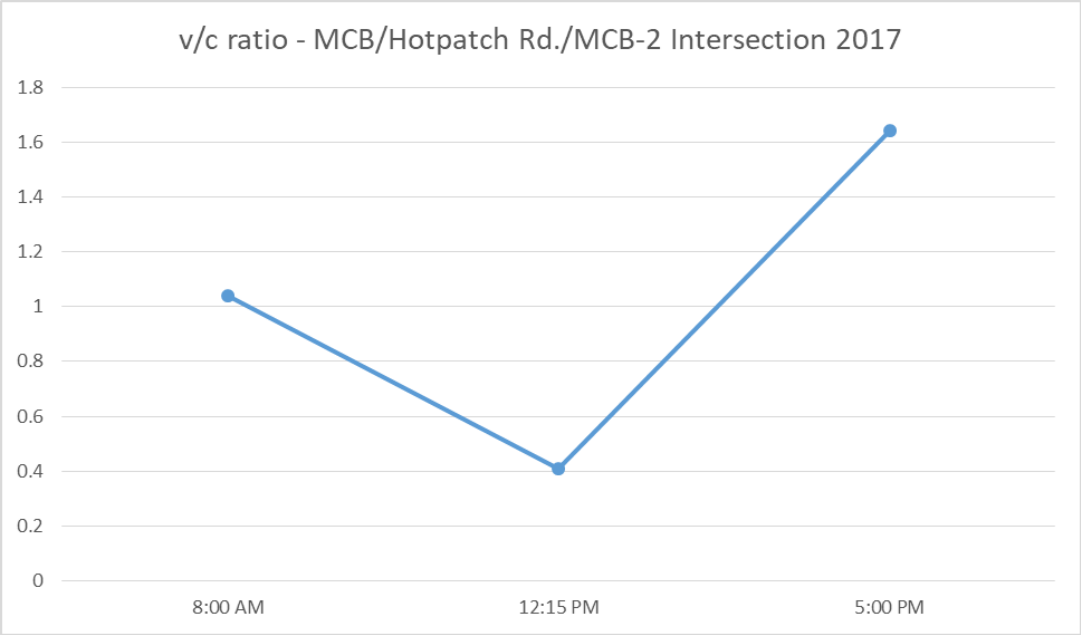


Figure 4.8.1 ; Source NAVFAC, Johnson, Mirmiran & Thompson Inc., Richmond, VA

Impacts to ground traffic and transportation are analyzed by considering the possible changes to existing traffic conditions and the capacity of area roadways from proposed increases in commuter and construction traffic.

4.8.3 Alternative A – No Action

Under the no action alternative, no additional parking or access roads would be constructed and current conditions would remain the same.

4.8.4 Alternative B

Potential Impacts

230 parking spaces and over 900 linear ft. of access road would be constructed within the 7.4 acre footprint as a result of the implementation of Alternative B. Any negative impacts to transportation would be temporary and would end after construction is completed. Traffic volume analysis by NAVFAC in the area projects an increase of 2.5% each year by 2030. In

2017, NAVFAC performed a traffic study for the Hotpatch Rd./MCB-1/MCB-2 intersection. At peak hours, the expected v/c ratio is expected to be 1.36 in the morning and 1.66 in the evening by 2030 as illustrated by figure 4.8.2.

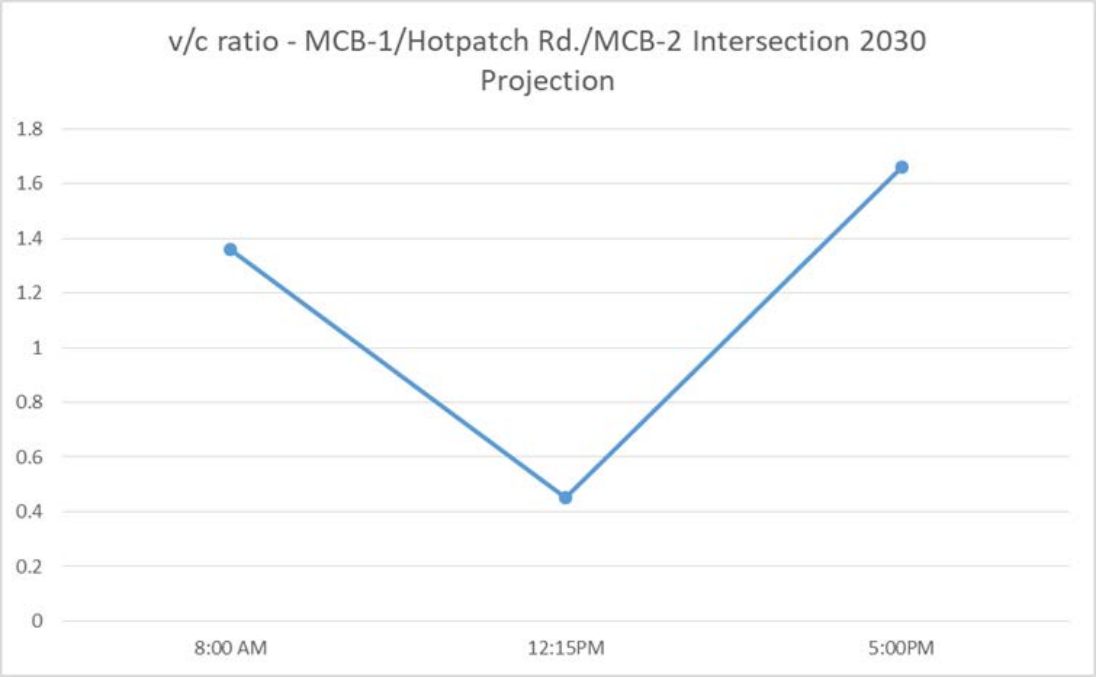


Figure 4.8.2 ;Source NAVFAC, Johnson, Mirmiran & Thompson Inc., Richmond, VA

The longer term impacts to transportation would be positive as the access road allow direct access to the new MCIOC Phase II facility from Camp Barrett Rd./MCB-1 while allowing for sufficient parking capacity for civilian and military vehicles.

A substantial portion of the Alternative B would be occupied by USMC personnel and as a result the proposed action will adhere to all relevant Anti-Terrorism Force Protection (ATFP) standards. ATFP standards consist of restrictions on site planning, including standoff distances, building separation, unobstructed space, drive-up and drop-off areas, access roads, and parking; structural design; structural isolation; and electrical and mechanical design.

4.9 Public Health and Safety

This discussion of public health and safety includes consideration for any activities, occurrences, or operations

that have the potential to affect the safety, well-being, or health of members of the public. A safe environment is one in which there is no, or optimally reduced, potential for death, serious bodily injury or illness, or property damage. The primary goal is to identify and prevent potential accidents or impacts on the general public. Public health and safety within this EA discusses information pertaining to community emergency services, construction activities, operations, and environmental health and safety risks.

Community emergency services are organizations which ensure public safety and health by addressing different emergencies. The three main emergency service functions onboard MCBQ include police, fire and rescue service, and emergency medical service.

Public health and safety during construction, demolition, and renovation activities is generally associated with construction traffic, as well as the safety of personnel within or adjacent to the construction zones.

Operational safety may refer to the actual use of the facility or built-out proposed project, or training or testing activities and potential risks to inhabitants or users of adjacent or nearby land and water parcels. Safety measures are often implemented through designated safety zones, warning areas, or other types of designations.

4.9.1 Regulatory Setting

Hazardous materials are defined by 49 CFR section 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table, and materials that meet the defining criteria for hazard classes and divisions in 49 CFR part 173.” Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations.

Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments, as: “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.”

Certain types of hazardous wastes are subject to special management provisions intended to ease the management burden and facilitate the recycling of such materials. These are called universal wastes and their associated regulatory requirements are specified in 40 CFR part 273. Four types of waste are currently covered under the universal wastes regulations: hazardous waste batteries, hazardous waste pesticides that are either recalled or collected in waste pesticide collection programs, hazardous waste thermostats, and hazardous waste lamps, such as fluorescent light bulbs.

Special hazards are those substances that might pose a risk to human health and are addressed separately from other hazardous substances. Special hazards include asbestos-containing material (ACM), polychlorinated biphenyls (PCBs), and lead-based paint (LBP). USEPA is given authority to regulate special hazard substances by the Toxic Substances Control Act (TSCA). Asbestos is also regulated by USEPA under the Clean Air Act, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

The DoD established the Defense Environmental Restoration Program (DERP) to facilitate thorough investigation and cleanup of contaminated sites on military installations (active installations, installations subject to Base Realignment and Closure, and formerly used defense sites). The Installation Restoration Program and the Military Munitions Response Program are components of the DERP. The Installation Restoration Program requires each DoD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The Military Munitions Response Program addresses nonoperational rangelands that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituent contamination.

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."

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 and construction and materials and debris from landfills by fiscal year 2015.

4.9.2 Affected Environment

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.

4.9.3 Alternative A – No Action

This alternative would maintain the status quo and would not have additional effects on health and safety.

4.9.4 Alternative B

Potential Impacts

The location of Alternative B is not a UXO site or a known former impact area there is no known soil contamination within the proposed action footprint.

Although Alternative B 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. Additionally excavation activities may expose lead or other munitions constituents during excavating activities. As a result, the following guidance must be followed during excavation and construction activities:

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 and Wastes

The hazardous materials and wastes analysis contained in the respective sections addresses issues related to the use and management of hazardous materials and wastes as well as the presence and management of specific cleanup sites at MCBQ.

4.10.1 Alternative A – No Action

Alternative A would have no effect on general procedures and practices for hazardous material removal, hazardous waste management, or solid waste management at MCBQ

4.10.2 Alternative B

Potential Impacts

This 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 G). 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 construction contractor is responsible for coordinating all solid waste disposal 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. However, the following guidance must be followed:

Hazardous Materials:

The contractor must submit a list of hazardous materials and the most current safety data sheet (SDS) for each material. The list of hazardous materials must include the product name, manufacturer's name, manufacturer's part number, national stock number, container size, and container type, if applicable. A compact disc containing the list of hazardous materials and safety data sheets is preferred. Mail to:

NREA Branch B 046
ATTN: Hazardous Materials Program
3049 Bordelon Street
Quantico, VA 22134-5001

The contractor must comply with the following orders and regulations when transporting, storing, and using hazardous materials on MCB Quantico: The Department of Transportation's (DOT) Hazardous Materials Regulations (49 Code of Federal Regulations (CFR)), the Occupational Safety and Health Administration (OSHA) Worker Protection Regulations (29 CFR), Marine Corps Order 4450.12A (Storage and Handling of Hazardous Materials), and Marine Corps Base Order 6280.4A (Hazardous Material Management Program). When the project is completed, the contractor must report by email, to the email addresses

identified above, the quantities of hazardous materials used and must remove unused hazardous materials from MCB Quantico.

Radon:

Pursuant to MCO 5090.2 dated 11 Jun 2018, Volume 6, 0307, and the Navy Radon Assessment and Mitigation Program (NAVRAMP) dated 30 Sep 2017, appropriate radon-reduction techniques shall be incorporated into the design and construction phases of new structures or into significant modifications to existing buildings. All new buildings shall be tested prior to occupancy following NAVRAMP methodology. All radon test data/results in support of the NAVRAMP shall be provided to the NREA radon technical representative.

5.0 Cumulative Impacts

This section (1) defines cumulative impacts, (2) describes past, present, and reasonably foreseeable future actions relevant to cumulative impacts, (3) analyzes the incremental interaction the proposed action may have with other actions, and (4) evaluates cumulative impacts potentially resulting from these interactions.

5.1 Definition of Cumulative Impacts

The approach taken in the analysis of cumulative impacts follows the objectives of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and CEQ guidance. Cumulative impacts are defined in 40 CFR section 1508.7 as “the impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

To determine the scope of environmental impact analyses, agencies shall consider cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact analysis document.

In addition, CEQ and USEPA have published guidance addressing implementation of cumulative impact analyses—Guidance on the Consideration of Past Actions in Cumulative Effects Analysis

(CEQ 2005) and Consideration of Cumulative Impacts in EPA Review of NEPA Documents (USEPA 1999). CEQ guidance entitled Considering Cumulative Impacts Under NEPA (1997) states that cumulative impact analyses should

"…determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative impacts of other past, present, and future actions...identify significant cumulative impacts…[and]…focus on truly meaningful impacts."

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in close proximity to the proposed action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?

- If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?

- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

5.2 Scope of Cumulative Impacts Analysis

The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the time frame in which the effects could be expected to occur. For this EA, the study area delimits the geographic extent of the cumulative impacts analysis. In general, the study area will include those areas previously identified in Chapter 4 for the respective resource areas. The time frame for cumulative impacts centers on the timing of the proposed action.

Another factor influencing the scope of cumulative impacts analysis involves identifying other actions to consider. Beyond determining that the geographic scope and time frame for the actions interrelate to the proposed action, the analysis employs the measure of "reasonably foreseeable" to include or exclude other actions. For the purposes of this analysis, public documents prepared by federal, state, and local government agencies form the primary sources of information regarding reasonably foreseeable actions. Documents used to identify other actions include notices of intent for EISs and EAs, management plans, land use plans, and other planning related studies.

5.3 Past, Present, and Reasonably Foreseeable Actions

This section will focus on past, present, and reasonably foreseeable future projects at and near the proposed project location. In determining which projects to include in the cumulative impacts analysis, a preliminary determination was made regarding the past, present, or reasonably foreseeable action. Specifically, using the first fundamental question included in Section 5.1, it was determined if a relationship exists such that the affected resource areas of the Proposed Action (included in this EA) might interact with the affected resource area of a past, present, or reasonably foreseeable action. If no such potential relationship exists, the project was not carried forward into the cumulative impacts analysis. In accordance with CEQ guidance (CEQ 2005), these actions considered but excluded from further cumulative effects analysis are not catalogued here as the intent is to focus the analysis on the meaningful actions relevant to informed decision-making. Projects included in this cumulative impacts analysis are listed in Table 5-1 and briefly described in the following subsections.

5.3.1 Past Actions

- Initial Construction of MCIOC
- Construction of Addition to Building 27410 for Marine Corps Network Operations Center (MCNOC).
- Demolition of Building 27220, Target Warehouse.
- P644 Dining Facility.
- Demolition of old Game Check Station on Telegraph Loop.
- The TA12B Boundary Adjustment.

5.3.2 Present and Reasonably Foreseeable Actions

- New Marine Corps Exchange – Mini-mart.
- Establishment of a Platoon Attack Range in TAs 10, 10C and 15B.
- Timber Harvest in TAs 10A, 10C and 11A.
- Establishment of a Crossing at Cannon Creek and Re-establishment of a Perimeter Trail in TA7A and TA9C.

Future projects:

- Construction of Two COCO Retail Service Facilities.
- Improve the intersection of MCB-1 and MCB-2 with the addition of a traffic circle.
- Construct new TBS fire station.
- Construction of three large warehouses to create consolidated storage area.
- P-656 – Visitor Control Center along Russell Rd. prior to existing gate house.
- Construct new Game Check Station to the north of ASP along MCB-1.
- Gym/Water Survival Training Facility.
- P-593 – WTBN Headquarters.
- P-665 – Target Production Facility.
- P-639 – Butler Buildings RSU Storage.
- Widen MCB-1 to 4 lanes.
- Establishment of Range 14G.

5.4 Cumulative Impact Analysis

Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the resources included for analysis, quantifiable data is not available and a qualitative analysis was undertaken. In addition, where an analysis of potential environmental effects for future actions has not been completed, assumptions were made regarding cumulative impacts related to this EA where possible. The analytical methodology presented in Chapter 4, which was used to determine potential impacts to the various resources analyzed in this document, was also used to determine cumulative impacts.

Environmental Impact Evaluation Matrix		
Resource	**Alternative A -No Action**	**Alternative B - Construction of MCIOC Phase II Facility**
Air Quality	No effect	No effect
Water Resources	No effect	No effect: No streams present at the proposed action location. Virginia State Forestry Best Management Practices (BMPs) will be implemented to protect all nearby wetlands and streams.
Geological Resources	No effect	No effect: BMPs will eliminate any impacts to soils.
Land Use	No effect	Proposed action is consistent with current land use in the area. Recreational activities will not be impacted.
Cultural Resources	No effect	No effect
Biological Resources	No effect	Not likely to adversely affect: USFWS TOYR from 15 April - 15 September will be implemented to reduce impacts to Indiana bat and NLEB. Action proponent will cease all tree removal activities and contact their contracting officer as well as NREA if a maternity colony for the NLEB, Little Brown bat or Tri-Colored bat is encountered during tree removal activities.
Transportation	No effect	Positive effect: Will increase parking capacity and add 900 ft. of access roadway.
Public Health and Safety/Munitions Response	No effect	No effect
Hazardous Waste	No effect	No effect

Figure 5.4.1

Forest Cover Remaining at MCBQ after Implementation of Proposed MCIOC Phase II Facility (In Acres).	
Current	52,090.00
MCIOC (Existing)	52,089.90
New Fire Station	52,089.60
Mini Mart	52,089.50
Westside COCO Facility	52,084.70
Range 5 Staging Area	52,071.00
TA12B Adjustment	52,068.10
ASP Expansion	52,068.08
Establishment of a Perimeter Trail in TA7A and TA9C	52,051.08
Establishment of a Platoon Attack Range in TA10A, 10C and 11A	52,021.47
Timber Harvest in TA10A, TA10C and TA11A	52,021.47
Timber Harvest in TAs 5B, 7A, 7C and 16D - Units 1-12	52,021.47
Range 14G	52,015.87
MCIOC Phase II Facility	52,008.47

Figure 5.4.2

6.0 Other Considerations Required By NEPA

6.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with 40 Code of Federal Regulations (CFR) section 1502.16(c), analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of federal, regional, state and local land use plans, policies, and controls. Table 6-1 identifies the principal federal and state laws and regulations that are applicable to the Proposed Action, and describes briefly how compliance with these laws and regulations would be accomplished.

- **Table 6-1 Principal Federal and State Laws Applicable to the Proposed Action**

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	***Status of Compliance***
National Environmental Policy Act (NEPA); CEQ NEPA implementing regulations; Navy/USMC procedures for Implementing NEPA	**Compliant-EA**
Clean Air Act	**Compliant – Proposed action is located in an air quality attainment area; all guidance will be followed pertaining to the Clean Air Act. Project proponent prefers to utilize natural gas generator.**
Clean Water Act	**Compliant– No streams present within the proposed action location. Will maintain a 50 ft. buffer round all streams and wetlands. No fill or discharge will occur into streams, wetlands or other designated waters of the U.S.**
DoD Directive 4700.4	**Compliant**
National Historic Preservation Act	**Compliant**
Endangered Species Act	**Compliant – No federally-threatened or federally-endangered species are found within the proposed action location. USFWS TOYR restrictions will be implemented to protect federally-threatened NLEB and the federally-endangered Indiana bat. No removal of trees will be allowed between 15 April to 15 September.**
Migratory Bird Treaty Act	**Compliant – Tree removal activities will occur outside of the nesting season.**
Bald and Golden Eagle Protection	**Compliant – Proposed action is not within 660 ft. of a bald eagle concentration area or a bald eagle nest. Proposed action does not require removal of overstory trees within 300 ft. of a bald eagle nest.**

- **Table 6-1 Principal Federal and State Laws Applicable to the Proposed Action**

Federal, State, Local, and Regional Land Use Plans, Policies, and Controls	***Status of Compliance***
Clean Water Act;EO 11990, Protection of Wetlands	**Compliant – No streams are present within the proposed action location.**
Comprehensive Environmental Response and Liability Act	**Compliant – Proposed action location is not a CERCLA site or a current hazardous waste generator.**
Resource Conservation and Recovery Act	**Compliant – Proposed action location is not within a former munitions site, does not contain contamination, and is not a hazardous waste storage location.**
Toxic Substances Control Act	**Compliant – If contamination is discovered during excavation or construction activities Public Health and Safety guidance in Section 4 will be followed. All hazardous materials guidance pertaining to hazardous wastes and material outlined in Section 4 pertaining to building construction will be followed.**
Executive Order 11988, Floodplain Management	**Compliant – Proposed action will occur outside of a 100-year floodplain and within an area of minimal risk.**
Executive Order 12088, Federal Compliance with Pollution Control Standards	**Compliant - If those conditions outlined in the Executive Order are encountered, guidance in Section 4 will be followed.**
Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management	**Compliant-EA**

7.0 Conclusions and Determinations

In the short-term, effects to the human environment with implementation of the proposed action would primarily relate to the construction activity itself. Air quality and recreational

opportunities would be temporarily impacted during the implementation of the proposed action. After the completion of construction, those impacts would be non-existent. Long-term effects include 7.4 acres of forest cover that would be removed to implement the proposed action, however, well over 52,000 acres of forest cover would remain at MCBQ.

The proposed action would not result in any impacts that would significantly reduce environmental productivity or permanently narrow the range of beneficial uses of the environment. If all guidance is followed, the proposed MCIOC Phase II Facility would not have any significant impacts to the human environment.

8.0 References

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

50 CFR part 17, Department of the Interior, Fish and Wildlife Service, Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Northern Long-Eared Bat With 4(d) Rule; Final Rule and Interim Rule, Vol. 80, No. 63, Thursday, April 2, 2015.

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

National Historic Preservation Act, 1966 (54 U.S.C. §300101 et seq.).

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9.0 List of Agencies and Persons Contacted

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

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Mr. Ronald Moyer, Forestry Section Head
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Mr. Jonmark Sullivan, Water Program Manager
Mr. David Norris, Hazardous Waste Program Manager
Mr. Brian Ventura, Hazardous Materials Program Manager
Mrs. Marilisa Porter, Solid Waste Program Manager
Mr. Brian Ventura, Munitions Response and Installation Restoration Program Manager

10.0 Public and Agency Participation and Intergovernmental Coordination

Regulations from the Council on Environmental Quality (CEQ) direct agencies to involve the public in preparing and implementing their NEPA procedures.

The Draft EA will be made available on the Marine Corps Base Quantico website at:

http://www.quantico.marines.mil/Offices-Staff/G-F-Installation-and-Environment/Natural-Resources-Environmental-Affairs/

The USMC has coordinated as well as consulted with the U.S. Fish and Wildlife Service (USFWS), Virginia Department of Environmental Quality (VDEQ) and Virginia Department of Game and

Inland Fisheries on all related issues pertaining to the proposed action.

The USMC also consulted with the Virginia State Historic Preservation Officer (SHPO) on all related issues pertaining to the proposed action.

Appendix A
Acronyms

The following list of abbreviations and acronyms are commonly used in Navy and USMC environmental planning documents and are presented to ensure they are applied in a consistent manner throughout all Navy and USMC environmental planning documents.

µPa - micropascal
AAQS - Ambient Air Quality Standard
AGL - above ground level
AICUZ - Air Installation Compatible Use Zone
AO - Area of Operations
AOR - Area of Responsibility
APE - Area of Potential Effect
APM – Air Program Manager
APZ - Accident Potential Zone
ARPA - Archaeological Resources Protection Act
ATC - air traffic control
ATFP - Antiterrorism Force Protection
BA - Biological Assessment
BaA – Bertie very fine sandy loam (0-3% slopes)
BACT – Best Access Control Technology
BASH - bird/aircraft strike hazard
BE - Biological Evaluation
BEQ - bachelor enlisted quarters
BmA – Bourne fine sandy loam (0-2% slopes)
BmB – Bourne fine sandy loam (2-6% slopes)
BMP - best management practice
CAA - Clean Air Act
CDD – Construction Demolition Debris
CDI – Combat Development and Integration
CEQ - Council on Environmental Quality
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CFR - Code of Federal Regulations
CHPPM - Center for Health Promotion and Preventive Medicine
CMC – Commandant of the Marine Corps
CNIC - Commander Navy Installations Command
CO - carbon monoxide
CO2 - carbon dioxide
CWA - Clean Water Act
dB - decibel
dBA - A-weighted sound level
dBC - C-weighted sound level
dBP - peak decibel
DEIS - Draft Environmental Impact Statement
DNL - day-night average sound level
DoD - United States Department of Defense
DON - United States Department of the Navy

DOT – United States Department of Transportation
DZ - drop zone
EA - Environmental Assessment
EAP - Encroachment Action Plan
EFH - Essential Fish Habitat
EIS - Environmental Impact Statement
EO - Executive Order
EOD - explosive ordnance disposal
ESA - Endangered Species Act
EPCRA - Emergency Planning and Community Right-to-Know Act
ESOP – Environmental Standard Operating Procedures
ESQD - explosive safety quantity distance
FAA - Federal Aviation Administration
FEIS - Final Environmental Impact Statement
FIFRA - Federal Insecticide, Fungicide, and Rodenticide Act
FONSI - Finding of No Significant Impact
FY - fiscal year
GHG - greenhouse gas
GIS - geographic information system
G-Demo – Goettege Demo Range
HAP - hazardous air pollutant
HAPC - habitat areas of particular concern
HE - high explosive
ICRMP - Integrated Cultural Resources Management Plan
INRMP - Integrated Natural Resources Management Plan
IO – Information Operations
IOT – Information Operation Technology
IRP - Installation Restoration Program
IT – Information Technology
kHz - kilohertz
LBP - lead based paint
LZ – Landing Zone
MAGTF – Marine Air Ground Task Force
MCAF - Marine Corps Air Facility
MCB - Marine Corps Base
MCCS – Marine Corps Community Services
MCINCR – Marine Corps Installation Command National Capital Region
MCCOC – Marine Corps Cybersecurity Operations Command
MCIOC – Marine Corps Installation Operations Command
MCO - Marine Corps Order
MEC - Munitions and Explosives of Concern
MEM - military expended material
MILCON - military construction
MkC2 – Mecklenburg Loam (6-10% slopes)
MMRP - Military Munitions Response Program
MOA - Military Operations Area

MSFCMA - Magnuson-Stevens Fishery Conservation and Management Act
MSL - mean sea level
MTR - military training route
NAAQS - National Ambient Air Quality Standards
NAGPRA - Native American Graves Protection and Reparation Act
NAVFAC - Naval Facilities Engineering Command
NEPA - National Environmental Policy Act
NEW - net explosive weight
NHPA - National Historic Preservation Act
NO2 - nitrogen dioxide
NOA - notice of availability
NOI - Notice of Intent
NPDES - National Pollutant Discharge Elimination System
NPS - National Park Service
NRHP - National Register of Historic Places
NRO – Northern Red Oak
OPNAV - Office of the Chief of Naval Operations
OPNAVINST - Office of the Chief of Naval Operations Instruction
OSHA – Occupational Safety and Health Administration
PAH - polynuclear aromatic hydrocarbon
PCB - polychlorinated biphenyl
PM_{10} - particulate matter less than or equal to 10 microns in diameter
$PM_{2.5}$ - particulate matter less than or equal to 2.5 microns in diameter
POV – Privately Owned Vehicle
Ppb - parts per billion
Ppm - parts per million
Ppt - parts per thousand
PPV - public/private venture
PTS - permanent threshold shift
PW – Public Works
RAICUZ - Range Air Installation Compatible Use Zone
RCMP - Range Complex Management Plan
RCRA - Resource Conservation and Recovery Act
Rd. - Road
ROD - Record of Decision
ROI – Region of Influence
RONA - Record of Non-Applicability
SAV - submerged aquatic vegetation
SEL - sound exposure level
SDS – Safety data sheets

SHPO - State Historic Preservation Officer
SIP - State Implementation Plan
SO2 - sulfur dioxide
SPL - sound pressure level
TSCA - Toxic Substances Control Act
TTS - temporary threshold shift
U.S.C. - United States Code
UAV - unmanned aerial vehicle
USACE - U.S. Army Corps of Engineers
USEPA - U.S. Environmental Protection Agency
USFWS - U.S. Fish and Wildlife Service
USGS - U.S. Geological Survey
USMC - U.S. Marine Corps
UXO - unexploded ordnance
VEQ – Virginia Department of Environmental Quality

APPENDIX B
Laws and Regulations

National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] sections 4321-4370h)

Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations [C.F.R.] parts 1500-1508)

Clean Air Act (42 U.S.C. section 7401 et seq.)

Clean Water Act (33 U.S.C. section 1251 et seq.)

DoD Directive 4700.4. Natural Resources Management Program. 24 January 1989.

National Historic Preservation Act (54 U.S.C. section 306108 et seq.)

Endangered Species Act (16 U.S.C. section 1531 et seq.)

Migratory Bird Treaty Act (16 U.S.C. sections 703-712)

Bald and Golden Eagle Protection Act (16 U.S.C. section 668-668d)

Comprehensive Environmental Response and Liability Act (42 U.S.C. section 9601 et seq.)

Resource Conservation and Recovery Act (42 U.S.C. section 6901 et seq.)

Toxic Substances Control Act (15 U.S.C. sections 2601-2629)

Executive Order (EO) 11988, Floodplain Management

EO 11990, Protection of Wetlands

EO 12088, Federal Compliance with Pollution Control Standards

EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management

EO 13693, Planning for Federal Sustainability in the Next Decade

Appendix C
Soil Maps

Appendix D
National Historic Preservation Act Section 106 Documentation

Appendix E
Endangered Species Act Documentation

Appendix F
Air Quality Methodology and Calculations

Appendix G
Construction Waste Management Report

Appendix H
Timber Appraisal