Finding of No Significant Impact (FONSI)
Dogue Creek Marina Travel Camp
Environmental Assessment
Fort Belvoir, Virginia

Name of Action: Dogue Creek Marina Travel Camp Environmental Assessment (EA)

Description of Proposed Action and Need: The Proposed Action involves construction and operation of a travel camp that would result in approximately 6.5-acres of recreational space for campers and recreational vehicle (RV) owners. The camp would include a support facility with an office, laundry section, camper's lounge space, restrooms and showers, vending machine space, and parking. Approximately 50 pull-through RV camp sites would be constructed, including concrete vehicle and picnic pads, and water, sewer, and electric hook-ups. The Proposed Action would be implemented in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. § 4321 *et seq*.), and DoD NEPA implementation policy and guidance.

The purpose of this project is to upgrade, construct, and operate an approximately 6.5-acre travel camp at Fort Belvoir on the site of the current Dogue Creek Marina to be managed by the Installation Management Command's Morale Welfare and Recreation (MWR) Directorate. The Proposed Action would provide needed space for customers at Fort Belvoir in a highly desirable waterfront area with access to the Potomac River.

The need for the facility is to provide additional space for eligible RVs and travelers to stay within the Fort Belvoir/National Capital Region. Currently, there is insufficient space for the level of patronage received from both eligible customers assigned to or supported by Fort Belvoir and those visiting the area. Prospective customers are forced to seek service from commercially operated facilities that are overcrowded during peak travel times, have higher cost, and are located an average of 45 minutes from Washington, DC. The existing RV park, located adjacent to Gunston Cove, offers fifty (50) spaces and a separate project known as the "travel camp expansion" project is under development to provide an additional thirty (30) spaces. The travel camp expansion project would still not provide enough space for eligible RVs and travelers.

Alternatives: The EA evaluates the Proposed Action, as described above, and the No Action Alternative. Three alternative sites were considered but eliminated. Site 1 was eliminated from consideration because of expenses associated with the redevelopment of the site due to existing foundations. The area also contains limited developable space due to a resource protection area for a perennial stream to the south and east of the site. Site 2 was considered for the travel camp but was eliminated from consideration due to environmental constraints. The area is surrounded by steep topography and slopes as well as a resource protection area, limiting the development area. Without extensive grading, the site would not be large enough to support the current design. The site also has potential for severe erosion and sediment control issues due to the steep topography. Site 3 was eliminated due to the presence of a historic site on the property and was dismissed.

No Action Alternative: Under the No Action Alternative, Fort Belvoir would not construct the Dogue Creek Marina Travel Camp, resulting in a lack of adequate recreational space for customers and visitors to the northern Virginia area. Fort Belvoir customers and supporters would be forced to continue to use surrounding, more expensive facilities with longer commutes to Washington, D.C. The morale of soldiers, family members, and Department of Defense civilians would remain stagnant at its current level.

Environmental Consequences: Environmental effects of the Proposed Action include those related to construction and operation of the Proposed Action as well as impacts of increased personnel and traffic to the marina area.

Under the Proposed Action, there would be no significant adverse impacts. Minor adverse impacts would occur to soils; topography; surface waters, floodplains, and stormwater; vegetation and wildlife; hazardous waste and toxic materials; electricity, potable water, sanitary sewers, telecommunications, and natural gas; noise; air quality; socioeconomics; and reasonably foreseeable effects.

No impacts would occur to land use; geology; groundwater; wetlands, riparian buffer areas, or coastal zones; cultural and historic resources; protection of children; or human health and safety.

Summary of Environmental Impacts: Based on the findings of the EA, it is anticipated that the Proposed Action would result in no significant adverse impact to any of the aforementioned resource areas. The Proposed Action could potentially have minor adverse impacts on selected resources. Adverse impacts would be maintained at a minor level by implementing best management practices, permit requirements, and performing other management measures throughout the construction and operational phases.

Notice of Availability: The Draft EA and FONSI were made available for a 30-day review and comment period to the public, regulatory agencies, and stakeholder organizations. A Notice of Availability (NOA) of the Draft EA and Draft FONSI announcing the 30-day review period was published in the Washington Post, *The Mount Vernon Gazette*, *Springfield Connection*, and *Belvoir Eagle*. Printed copies of the Draft EA and FONSI were made available for review at the Fort Belvoir Library; the Fairfax County Library - Kingstowne Branch and the Sherwood Branch; and on the Installation's website at: https://home.army.mil/belvoir/index.php/about/Garrison/directorate-public-works/environmental-division.

Response to Comments: Comments from federal, state, and local agencies and the public received during the public review period were considered by Fort Belvoir for incorporation into the Final EA.

Conclusion: Pursuant to NEPA and DoD NEPA implementation policy and guidance, it is anticipated that the Proposed Action would not have significant adverse effects on the environment and that a FONSI is appropriate. An Environmental Impact Statement (EIS) will not be prepared.

_____ _____

David J. Stewart
Colonel, U.S. Army
Commanding

Date

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Fort Belvoir
Dogue Creek Marina Travel Camp
Environmental Assessment

Fort Belvoir, Virginia
July 2025

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Fort Belvoir Dogue Creek Marina Travel Camp
Fort Belvoir, Virginia

ENVIRONMENTAL ASSESSMENT

Reviewed by:
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1 INTRODUCTION

1.1 PROJECT BACKGROUND

Pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] 4321 *et seq.*, as amended), Department of Defense (DoD) NEPA Implementing Procedures, 30 June 2025, and Army Regulation 200-1, Fort Belvoir has prepared an Environmental Assessment (EA) to evaluate potential environmental impacts associated with construction of a travel camp at the Dogue Creek Marina facility at Fort Belvoir, Virginia.

Fort Belvoir is located approximately 18 miles southwest of Washington, DC, and 17 miles south of the Pentagon, on the Potomac River in Fairfax County, Virginia (**Figure 1-1**). Fort Belvoir contributes to the nation's defense by providing a secure operating environment for regional and worldwide DoD missions and activities. Fort Belvoir also provides housing, medical services, recreational facilities, and other support services for active-duty military members, families, and retirees in the National Capital Region (NCR).

The Army established Camp A.A. Humphreys in 1915 on land provided by the War Department prior to World War I (WWI). The Camp provided active military training through WWI and the interwar years, hosting the Army Engineer School from 1919 to 1988. In 1935 Camp Humphreys was renamed Fort Belvoir and provided military training support grounds up to and through World War II (WWII).

The area of the present Dogue Creek Marina was used briefly during WWII as the Congressional Demonstration Area which straddled Dogue Creek and the adjacent properties to the east and west. After WWII, Fort Belvoir's mission began to shift from training to research and development, and materials testing and evaluation. In the 1950s, Fort Belvoir's mission expanded to include hosting DoD organizations. The present configuration as a marina property was established in the early 1970's. With the departure of the Army Engineer School in 1988, Fort Belvoir's mission expanded to support additional DoD organizations. In September 2005, the Defense Base Realignment and Closure (BRAC) Commission recommended numerous realignment and closure actions for military capabilities, which led to the establishment of the current configuration of facilities at Fort Belvoir.

The Proposed Action would be located on the site of the existing Dogue Creek Marina adjacent to the River Village neighborhood on the eastern shore of the Dogue Creek (**Figure 1-2**). The Dogue Creek Marina is currently a gated facility with 111 wet slips, 300 dry storage spaces, 6 covered dry storage stalls, a two-lane boat launch ramp, a kayak launch pier, and one travel lift. It is currently operated by the Fort Belvoir Family and Morale, Welfare, and Recreation (MWR) Directorate to provide recreation opportunities for active duty and retired military service members and DoD civilians.

Figure 1-1: Fort Belvoir Location

Figure 1-2: Proposed Action Location

1.2 PURPOSE AND NEED

The *purpose* of this project is to upgrade, construct, and operate an approximately 6.5-acre travel camp at Fort Belvoir on the site of the current Dogue Creek Marina to be managed by the MWR Directorate. The Proposed Action would provide needed space for customers at Fort Belvoir in a highly desirable waterfront area with access to the Potomac River.

The *need* for the facility is to provide additional space for eligible RVs and travelers to stay within the Fort Belvoir/NCR. Currently, there is insufficient space for the level of patronage received from both eligible customers assigned to or supported by Fort Belvoir and those visiting the area. Currently, prospective customers are forced to seek service from commercially operated facilities that are overcrowded during peak travel times, have higher cost, and are located an average of 45 minutes from Washington, DC. The existing RV park, located adjacent to Gunston Cove, offers fifty (50) spaces, and a separate project known as the "travel camp expansion" project is under development to provide an additional 30 spaces. The travel camp expansion project will still not provide enough space for eligible RVs and travelers.

1.3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

Under NEPA, an Environmental Assessment (EA) must be prepared when a proposed major federal action is not clearly a significant impact on the environment but could have significant effects. If a proposed major federal action is determined to have a significant effect on the environment, NEPA requires that a more detailed Environmental Impact Statement (EIS) be prepared. An EA provides sufficient evidence and analysis for determining whether to prepare an EIS. Actions that are determined to be exempt by law, emergencies, or are categorically excluded do not require the preparation of an EA or EIS. An EA contains an evaluation of the environmental consequences of the Proposed Action and the No Action Alternative including direct, indirect, and reasonably foreseeable effects, as well as qualitative and quantitative (where possible) assessment of the level of significance of these effects. The EA results in either a Finding of No Significant Impact (FONSI) or a Notice of Intent (NOI) to prepare an EIS.

The purpose of this EA is to inform decision makers and the public of the likely environmental consequences of the Proposed Action and No Action Alternative. This EA identifies, documents, and evaluates environmental effects of the construction and operation of a travel camp at Fort Belvoir, Virginia. Environmental effects would include those related to construction and operation of the Proposed Action. The Proposed Action, including the No Action Alternative and other alternatives eliminated from consideration, are described in **Section 2.0, Description of Proposed Action and Alternatives.**

The existing conditions at the Proposed Action site on Fort Belvoir are described in **Section 3.0, Affected Environment and Environmental Consequences**, which, with information presented in the No Action Alternative, constitutes the baseline against which the other alternatives are measured for the analysis of the effects of the construction and operation of the travel camp. The following resources are evaluated in this EA: land use; geology, topography, and soils; water resources; biological resources; hazardous waste and toxic materials; utilities; noise;

air quality; traffic and transportation; cultural and historic resources; socioeconomics; human health and safety, and reasonably foreseeable effects.

1.4 PUBLIC INVOLVEMENT

Public participation opportunities with respect to this EA and final decision making on the Proposed Action are guided by DoD NEPA implementation policy and guidance. Upon completion, the Draft EA will be made available to the public for 30 days, along with a Draft FONSI, if appropriate. A Notice of Availability (NOA) will be sent to agencies and organizations (including U.S. Fish and Wildlife Service (USFWS) and the Virginia State Historic Preservation Office [SHPO]) known to have an interest in the site at the beginning of the public comment period for official coordination and comment on the Draft EA. The NOA will be published in *The Mount Vernon Gazette*, *Springfield Connection*, and *Belvoir Eagle*. Electronic copies of the Draft EA will be made available for review on the Fort Belvoir Environmental webpage at https://home.army.mil/belvoir/index.php/about/Garrison/directorate-public-works/environmental-division.

At the end of the 30-day public review period, the Army will consider any comments submitted by individuals, agencies, or organizations on the Draft EA and Draft FONSI. These comments can be found in **Appendix A**.

As appropriate, the Army can execute the FONSI and proceed with implementation of the Proposed Action. If it is determined prior to issuance of a Final FONSI that implementation of the Proposed Action would result in significant impacts, the Army will publish in the *Federal Register* an NOI to prepare an EIS, commit to mitigation actions sufficient to reduce impacts below significance levels, or not take the action.

1.5 ENVIRONMENTAL LAWS AND REGULATIONS

This EA has been prepared in accordance with the NEPA, as amended (42 U.S.C. § 4321 *et seq.*), DoD NEPA Implementing Procedures, 30 June 2025, and Army Regulation 200-1.

Army decisions that affect environmental resources and conditions occur within the framework of laws, regulations, Executive Orders (EOs), and policy. Some of these authorities prescribe standards for compliance while others require specific planning and management actions to protect environmental values potentially affected by Army actions. Key provisions of appropriate statutes and EOs are described in more detail throughout the text of this EA and in **Table 1-1**.

Table 1-1: Compliance with Federal Environmental Statutes and Executive Orders

Acts	Compliance
Archaeological Resources Protection Act (ARPA) of 1979	FULL
Clean Air Act, as amended (42 United States Code [U.S.C.] ch. 85, subch. I §7401 et seq.)	FULL
Clean Water Act, as amended (33 U.S.C. ch. 23 §1151)	FULL
Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. §9601 et seq.)	FULL
Endangered Species Act of 1973, as amended (16 U.S.C. ch. 35 §1531 et seq.)	FULL
Energy Independence and Security Act of 2007, Section 438	FULL
Farmland Protection Policy Act (7 U.S.C 4201)	FULL
Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e)	FULL
Migratory Bird Treaty Act (16 U.S.C §§703-712, et seq.)	FULL
National Defense Authorization Act of 2018 (Public Law 115-91)	
National Environmental Policy Act of 1969 (42 U.S.C. §4321 et seq.)	FULL
National Historic Preservation Act of 1966, as amended (16 U.S.C. ch. 1A, subch.II §470 et seq.)	FULL
Noise Control Act of 1972, as amended (42 U.S.C. §§4901-4918, et seq.)	FULL
North American Wetlands Conservation Act (16 U.S.C. 4401-4412)	FULL
Resource Conservation and Recovery Act (42 U.S.C. ch. 82 §6901 et seq.)	FULL
Safe Drinking Water Act, as amended (42 U.S.C. §300f)	FULL
Sikes Act, as amended (16 U.S.C. 670a-670o)	FULL
Solid Waste Disposal Act of 1965, as amended (42 U.S.C 6901 et seq.)	FULL
Toxic Substances Control Act of 1976 (15 U.S.C. ch.53, subch. I §§2601-2629)	FULL
Watershed Protection and Flood Prevention Act of 1954 (16 U.S.C. §1101, et	FULL
Wild and Scenic Rivers Act (16 U.S.C. 1271, et seq.)	FULL
Executive Orders (EO)	
Chesapeake Bay Protection and Restoration (EO 13508)	FULL
Consultation and Coordination with Indian Tribal Governments (EO 13175)	FULL
Federal Compliance with Pollution Control Standards (EO 12088)	FULL
Floodplain Management (EO 11988)	FULL
Invasive Species (EO 13112)	FULL
Protection and Enhancement of the Cultural Environment (EO 11593)	FULL
Protection of Children from Environmental Health Risks and Safety Risks (EO 13045)	FULL
Protection of Wetlands (EO 11990)	FULL

Unleashing American Energy (EO 14154)	FULL
Fort Belvoir Policy Memoranda	
Excavation Work Permit Requirements and Procedures	FULL
Prohibition on the Use of Groundwater as a Water Source at Fort Belvoir	FULL
Military Munitions and Explosives of Concern Requirements for Land Modification and Military Construction on Fort Belvoir	FULL

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2 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Pursuant to the requirements of NEPA and DoD NEPA implementation policy and guidance, this section presents alternatives to the Proposed Action, including the No Action Alternative.

2.1 ALTERNATIVES CONSIDERED

2.1.1 Proposed Action

The Proposed Action involves construction and operation of a travel camp that would result in approximately 6.5-acres of recreational space for campers and RV owners. The camp would include a support facility with an office, laundry section, camper's lounge space, restrooms and showers, vending machine space, and parking. Approximately 50 pull-through RV camp sites would be constructed, including concrete vehicle and picnic pads and water, sewer, and electric hook-ups. Rustic tent camp sites would also be constructed and include tables and grills, water and electrical hook-ups, and vehicle parking spaces. Paved vehicle circulation roads, walking paths, landscaping, street and site lighting, sewage lift stations, stormwater management (SWM), utility upgrades, and area directional signage would also be included.

The Proposed Action site is located within the existing Dogue Creek Marina facility, as shown in **Figure 1-2**, and construction would displace a large number of the dry slips. The Limits of Disturbance (LOD) (area where construction activities are allowed) and the current conceptual site layout is shown in **Figure 2-1**. The existing marina infrastructure, including piers (and their associated wet slips), boat lift, two-lane boat ramp, and kayak launch with finger pier, would remain in place. The existing approximately 7,500 square foot (SF) Building 1696, located in the vicinity of where Delaware Road forks, would be demolished and replaced with an approximately 10 to 25 space paved parking lot located south of the new 3,000 SF Welcome Center/camp support building. Approximately 15 rustic tent camping spots would be apportioned on the unpaved peninsula in the southwestern portion of the Proposed Action site. RV spaces would be configured to allow pull-through access for full-sized rigs, and new access roads would be constructed to provide for adequate maneuvering space in/out of individual spaces as well as into and out of the facility itself. Beautification of the shoreline through strategic plantings will add aesthetic appeal to this waterfront location, but no work to alter the shoreline through grading or adding armaments (such as riprap or bulkheads) and no alterations to the marina infrastructure (e.g., in-water work) are part of this Proposed Action. Specific details regarding the final size of the Welcome Center/camp support building, number of RV and camper spaces, and configuration of the roadways will be developed as the project moves through the design phases, to be initiated once full project funding is appropriated.

2.1.2 No Action Alternative

Under the No Action Alternative, Fort Belvoir would not construct this travel camp, resulting in a continued lack of adequate recreational space for eligible customers and visitors to the Northern Virginia area. Fort Belvoir customers and supporters would continue to use surrounding, more expensive facilities with longer commutes to Washington, DC. The morale of soldiers, family members, and DoD Civilians would remain stagnant at its current level.

Figure 2-1: Conceptual Site Layout

2.2 ALTERNATIVES ELIMINATED FROM DETAILED STUDY

DoD NEPA implementation policy and guidance require reasonable alternatives to be evaluated. Accordingly, Fort Belvoir established the following screening criteria to identify reasonable alternatives. To be fully considered and analyzed in this EA, an alternative must: be economically viable in terms of project cost and resulting community impact; compatible with adjacent land uses and avoid potential encroachment; be cognizant of the availability of buildable space and access to utilities, support services, and transportation infrastructure; compatible with the Fort Belvoir Area Development Plan; result in minimal to low environmental impacts; pose a minimal security risk to operations; and, consider human health and safety impacts.

Several possible locations on Fort Belvoir were identified for the Proposed Action but were eliminated from consideration for not fully meeting the screening criteria. These Alternatives are listed below.

Alternative 1: This site is located approximately 3 miles southwest of the Proposed Action site, south of Warren Road and north of Williams Street (**Figure 2-2**). It was also previously considered for the travel camp expansion project but eliminated from consideration for this Proposed Action because of expenses associated with site redevelopment due to the potential for existing foundations remaining in place from previous land use. The Alternative 1 area also contains limited developable space due to a resource protection area for a perennial stream to the south and east of the site. In addition, Alternative 1 is near the Tompkins Basin Visitor Center which would cause negative impacts to aesthetics for the Visitor Center.

Alternative 2: This site, located near the site of Alternative 1, north of Warren Road (**Figure 2-2**), was eliminated from consideration due to environmental constraints. The area is surrounded by steep topography and slopes with implications for runoff, as well as an adjacent resource protection area, limiting the developable property. The site also has potential for severe erosion and sediment control (ESC) issues due to the steep topography and would require extensive grading.

Alternative 3: A third alternative considered but dismissed from further consideration was conversion of a portion of the existing Castle Park area at Warren and Johnston Roads, directly adjacent to Gunston Cove (**Figure 2-2**). This area is part of the larger Tompkins Basin MWR complex, which supports a fishing pier, dog park, indoor archery range, and outdoor equipment rental. A National Register of Historic Places (NRHP) eligible site (Archaeological Site 44FX1328) is located in the Castle Park area, so this alternative was quickly dismissed.

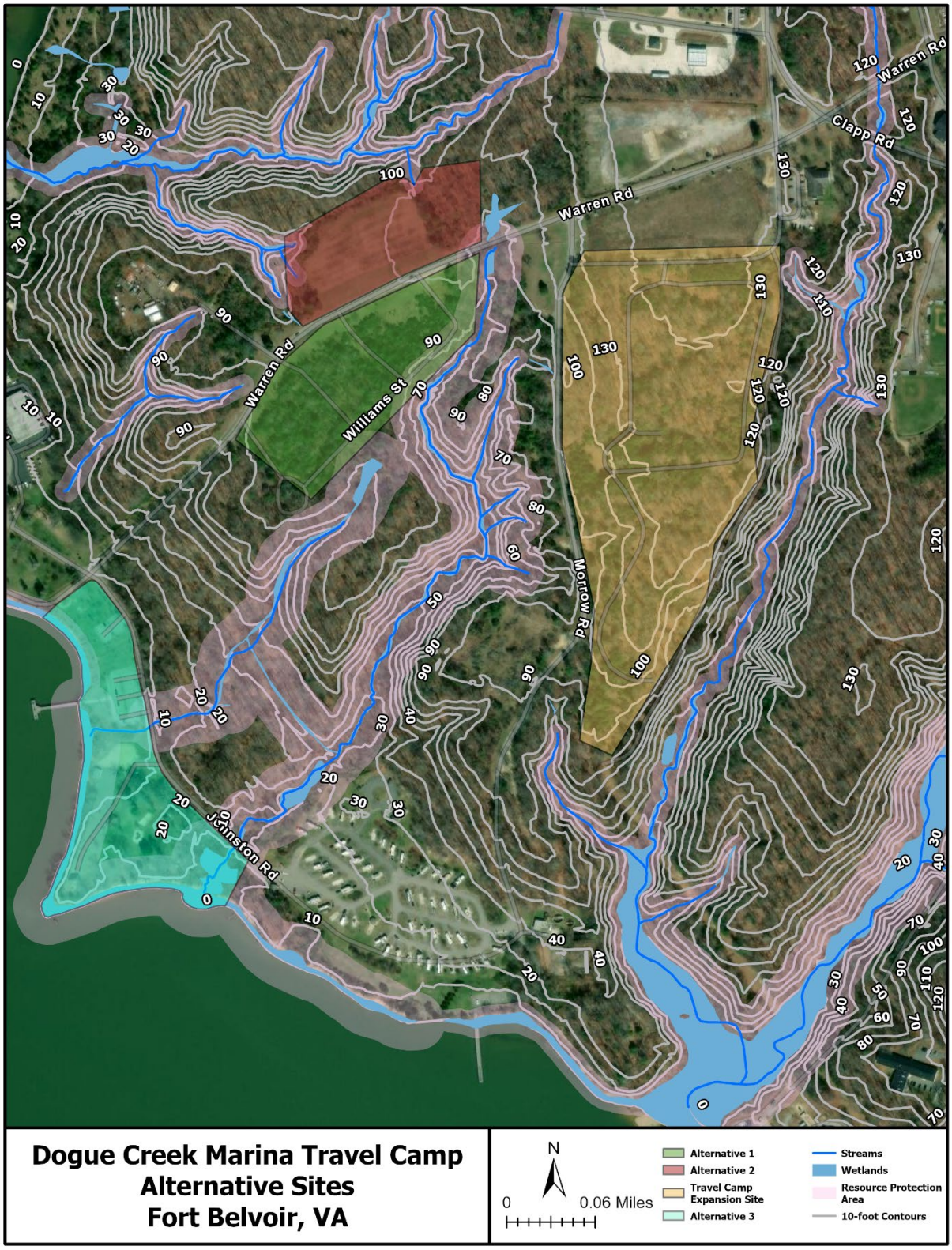

Figure 2-2: Alternative Sites Considered but Eliminated from Detailed Study

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section presents the affected environment at the Proposed Action site and analyzes the environmental consequences of implementing the Proposed Action and No Action Alternative. The impacts of an action can vary in duration. Two levels of impact duration could occur: short-term and long-term. Short-term impacts are temporary and generally occur during construction with the resource returning to preconstruction conditions almost immediately afterward or represent impacts that could last up to two years following construction. Impacts considered long-term would occur if the resource would require more than five years to recover or result in a permanent change from an activity that affects a resource for the life of the project or beyond.

3.1 LAND USE

3.1.1 Affected Environment

Fort Belvoir is approximately 8,500 acres in size with approximately 65 percent of the Installation being undeveloped, mostly due to environmental and historical operational constraints. Fort Belvoir is divided into five areas. The Main Post is comprised of the North Post, South Post, the Southwest Area, and the Davison Army Airfield. The Fort Belvoir North Area is non-contiguous with the Main Post and located northwest of Interstate (I)-95. The North and South Posts are separated by Richmond Highway, which is a major transportation corridor in this part of Virginia. The North and South Posts contain most of the development at Fort Belvoir (Fort Belvoir, 2024a).

Current land use designations used at Fort Belvoir reflect the predominant use of a particular area, provide flexibility in siting facilities and encourage mixed-use development. Existing land use at Fort Belvoir is a function of its history, geography, needs, and responsibilities as an Installation supporting more than 160 elements of the Army and DoD. Development at Fort Belvoir has been guided by the land use plan defined in the Fort Belvoir's Real Property Master Plan (Fort Belvoir, 2015a). The majority of Fort Belvoir is classified as Community (2,569 acres). Community land use permits usages such as childcare facilities. The next common category is Professional/Institutional (2,113 acres), which typically permits usage such as municipal facilities, research buildings, office buildings, etc. (**Table 3-1**). (Fort Belvoir, 2015a).

Table 3-1: Existing Land Use Acreages

Land Use Category	Total (acres)	Constrained (acres)	Developed (acres)
Professional/Institutional	2,113	863	1,250
Residential	1,240	655	585
Troop	46	0	46
Community	2,569	1,626	943
Range/Training	1,463	1,003	460
Airfield	690	472	218
Industrial	378	95	284
TOTAL	**8,500**	**4,714**	**3,786**
TOTAL PERCENTAGES	**100**	**55**	**45**

Source: Fort Belvoir, 2015a

The Proposed Action site is located in the South Post section on the eastern portion of Fort Belvoir, and the land use classification for the site and surrounding area is Residential. The residential population on at Fort Belvoir is approximately 7,500 tenants. This designation includes housing, barracks, and lodging for visitors and tenants at Fort Belvoir. Housing communities include fourteen housing villages, with a total of 2,150 housing units. The barracks can hold a maximum of 1,000 permanent soldiers in transition and lodging is privatized to Rest Easy, LLC (Fort Belvoir, 2015a).

3.1.2 Environmental Consequences

3.1.2.1 Threshold of Significance

Impacts on land use could occur when the implementation of a project creates an inconsistency between the actual use of the land and the underlying land use designation, or when a project is incompatible with adjacent or surrounding land uses (i.e., siting an industrial facility in a residential area).

3.1.2.2 Impacts of Proposed Action

There are negligible, long-term, direct, adverse impacts anticipated to land use due to the variance in the land use designation definition and the purpose of the Proposed Action. The Proposed Action site is situated within an area of the Fort Belvoir South Post designated as a Residential Land Use Zone. This classification generally includes neighborhood housing and barrack housing for military members and their families during their assignment to Fort Belvoir. Although the proposed travel camp's purpose (recreational/community) is not consistent with the current land use designation definition, the Proposed Action site footprint has been used as a shared recreational marina space since, at a minimum, the 1960s; therefore, there is no significant change in what the land is used for currently and historically.

3.1.2.3 Impacts of No Action Alternative

Under the No Action Alternative, the Proposed Action would not be constructed. There would be no impacts to land use on Fort Belvoir because the current land use would remain unchanged. The marina would continue to operate in residential land use area.

3.2 GEOLOGY, TOPOGRAPHY AND SOILS

3.2.1 Affected Environment

3.2.1.1 Geology

Fort Belvoir spans the eastern part of the Piedmont province and the upper part of the Coastal Plain Physiographic province (from west to east) and exhibits characteristics of both provinces. The Fall Line, which runs north to south through Virginia, crossing Fairfax County at approximately the I-

95 corridor, forms the transition zone between the resistant, igneous and metamorphic rock of the Piedmont and the softer, sedimentary rocks of the Coastal Plain (Fort Belvoir, 2024b).

A finger of Piedmont Upland province bedrock extends from north to south along Accotink Creek. Piedmont Upland bedrock outcrops form the bed and adjacent slopes of the creek. Most of the more gently sloping areas to the east and west of the creek consist of unconsolidated deposits from the Coastal Plain province.

The northern portion of Fort Belvoir is situated on the Piedmont Plateau Physiographic Province. The underlying geology of this Province is characterized by hard, crystalline igneous and metamorphic formations with some areas of sedimentary rocks, with saprolite deposits overlying the bedrock.

The Proposed Action site is located in the southeast portion of the Fort Belvoir. The southern and central portions of Fort Belvoir are situated on the Coastal Plain Physiographic Province, which is comprised of several geologic formations, including the Potomac Formation, Bacons Castle Formation, Shirley Formation, and Alluvium and Pliocene sand and gravel. These formations are characterized by unconsolidated sand, silt, and clay underlain by residual soil and weathered crystalline rocks. The Potomac Group, which makes up the majority of the Coastal Plain Physiographic Province under Fort Belvoir, is characterized by lens-shaped deposits of interbedded sand, silt, clay, and gravel, primarily of nonmarine origin (Fort Belvoir, 2024a).

3.2.1.2 Topography

The terrain at Fort Belvoir consists of wide, flat plateaus dissected by steep ravines. Elevation decreases from west to east, ranging from a high of 300 feet above mean sea level (MSL) in the northwestern corner of Fort Belvoir to 230 feet above MSL at the intersection of Beulah Street and Woodlawn Road near the northern edge of Main Post, to sea level at the eastern edge of Main Post along the Potomac River (Fort Belvoir, 2024a).

Topography does not vary greatly throughout the Proposed Action site, with the highest elevation being approximately 2 feet above MSL, located in the southern section.

The lowest elevation, approximately 0 feet above MSL, is seen throughout the remainder of the Proposed Action site (**Figure 3-1**). The southern portion of the site gradually slopes into a flat topographic landscape spanning towards the remaining portion of the Proposed Action site (north and northwest), the area adjacent to the Proposed Action site (east and northeast), and towards Dogue Creek (south and west).

3.2.1.3 Soils

There are two soil types within the Proposed Action site (**Figure 3-2, Table 3-2**). It is comprised primarily of Urban land (9.1 acres). The second soil type is Grist Mill-Mattapex complex, 2 to 7 percent slopes (0.1 acres) (U.S. Department of Agriculture [USDA] Natural Resources Conservation Service [NRCS], 2025). Note: **Figure 3-2** shows "Water" as a soil type. This is a

result of small areas on the USDA mapping (areas near the shoreline) that did not match perfectly with the Proposed Action area boundaries.

Table 3-2: Soil Types within the Proposed Action Site

Map Unit Symbol	Soil	Approximate Acreage within Proposed Action site (Acres)	Drainage Class	Hydric
95	Urban Land	9.1	N/A	N/A
46B	Grist Mill-Mattapex Complex, 2-7 percent slopes	0.1	Well Drained	No

Notes:
1. Hydric criteria refer to the potential of a soil to support vegetation and/or hydric conditions indicative of wetlands.
2. N/A = Not applicable

Source: USDA NRCS, 2024

3.2.2 Environmental Consequences

3.2.2.1 Threshold of Significance

Geology, topography, and soil impacts are evaluated separately in the following sections. The impacts on geology are analyzed based on potential changes caused by the Proposed Action to bedrock, unique sensitive landforms, or rock foundations. The impacts on topography are analyzed on potential changes to surface features, especially steep slopes. Impacts to soils are analyzed based on potential changes to soil type, erosion, and sedimentation due to the implementation of the Proposed Action.

3.2.2.2 Impacts of Proposed Action

3.2.2.2.1 Geology

The construction and operation of the Proposed Action would have no adverse or beneficial impacts on the underlying geology of the area. There would be no bedrock blasting or impacts to bedrock outcrops during the construction of the proposed travel camp that would impact the geology of Fort Belvoir.

3.2.2.2.2 Topography

Construction

The construction of the Proposed Action could have short-term, minor, direct, adverse impacts on the topography of the site. Short-term impacts could be expected from the excavation and grading employed to prepare the site for construction. Areas impacted during construction would be re-graded to prior conditions. It would not result in the alteration or destruction of any unique or noteworthy topographic features within Fort Belvoir.

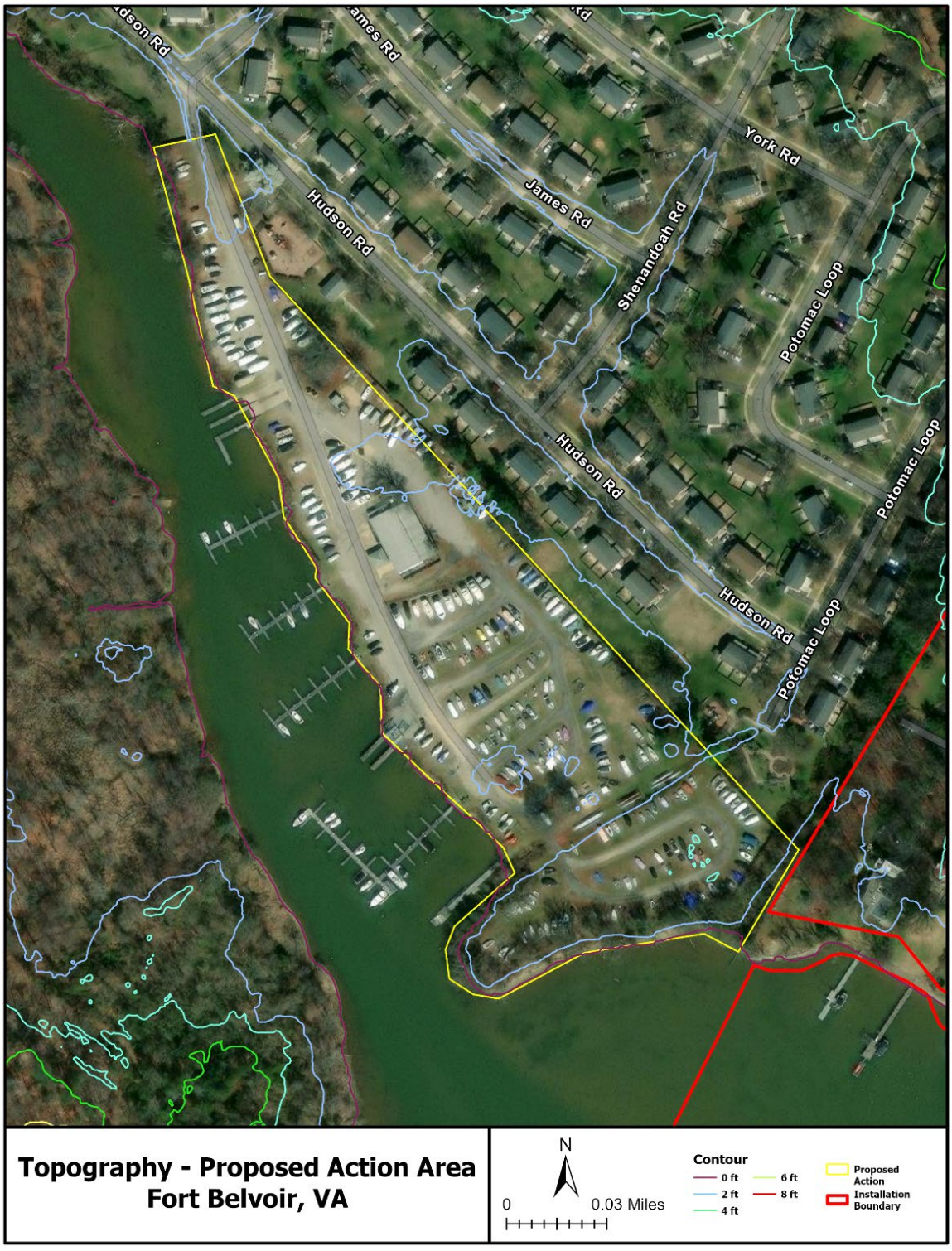

Figure 3-1: Topography at Dogue Creek Marina

Figure 3-2: Soils on the Proposed Action Site

Operation
Long-term, minor, direct, adverse impacts from the operation of the Proposed Action could be expected as the elevations would be permanently altered to support the buildings, the cement pads, roads, and SWM system. Development would be located in the north-central area of the site to maximize the use of topographic highs to the extent possible. There would be no construction on the steep slopes of the southeastern area of the site. In addition, no grading would occur on the southern portion of the site where topography becomes more dramatic.

3.2.2.2.3 Soils

Construction
The construction of the Proposed Action would have short-term, minor, direct adverse impacts for Fort Belvoir's Industrial Stormwater Permit (ISW) VA0097221. A representative outfall (RO-016) is located adjacent to the existing building and sediment released from construction activities in the area would travel to this outfall (which is monitored semi-annually for Total Suspended Solids [TSS] and other contaminants) and thereby could increase that sampling measurement. Ground-disturbing activities would include vegetation and topsoil removal, the removal of mature landscape trees, and grading. Soils would be compacted, and soil layer structure would be disturbed and modified. Exposed soils would be susceptible to wind and surface runoff, which may lead to erosion and additional loss of soil. Any areas that were impacted during construction would be re-graded and native vegetation planted to restore soil stabilization on the site.

To minimize potential erosion impacts during the construction phase, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared in accordance with Virginia Department of Environmental Quality (VADEQ) Virginia Pollutant Discharge Elimination System (VPDES) regulations, 9 Virginia Administrative Code (VAC) 25-875-500 SWPPP Requirements, and the Virginia Stormwater Management Act. Additionally, a site-specific ESC plan would be prepared prior to land disturbance in accordance with the Virginia Stormwater Management Handbook effective July 1, 2024. The ESC plan would employ Best Management Practices (BMPs) and include strict measures consistent with the Virginia Erosion and Sediment Control Handbook to minimize erosional impacts. Further, a construction general permit would be required under 9 VAC 25-880.

In addition, SWM BMPs would be used to help minimize impacts to exposed soils during and following construction. These BMPs include revegetating soils as soon as possible with native, non-invasive vegetation, surrounding exposed soils with silt fence and synthetic hay bales, designating specified loading and unloading areas, covering exposed soils during anticipated storm events, and minimizing construction vehicle traffic on exposed soils to the maximum extent practicable.

Operation
Operation of the Proposed Action would have long-term, minor, direct, adverse impacts at the Proposed Action site due to the disturbance of the soil layer profile and loss of topsoil in the new impervious areas. The operation of the Proposed Action could add up to a maximum of 6.5 acres of impermeable surface to the area. Increased impermeable surfaces in the area could permanently increase the potential for release of water flow, TSS, and Total Petroleum Hydrocarbons (TPH)

due to greater potential for petroleum, oil, lubricant (POL) spills. However, the design would include SWM BMPs through the implementation of low impact development (LID) measures in compliance with Section 438 of the Energy Independence and Security Act (EISA). This would minimize long-term soil erosion by maintaining the pre-project hydrology of the site. Increased potential for releases would come from transient customers (rather than stationary/known sources) not knowing or not abiding appropriately to Fort Belvoir's spill prevention policies.

3.2.2.3 Impacts of No Action Alternative

Implementation of the No Action Alternative would have no impacts on topography, geology, or soils. The travel camp would not be constructed, and there would be no activities that would change the topography, geology, or the existing soil quality of the site.

3.3 WATER RESOURCES

3.3.1 Affected Environment

3.3.1.1 Surface Water

Surface waters at Fort Belvoir drain to the Potomac River or adjacent bays (Gunston Cove, Accotink Bay, and Pohick Bay), either directly or through one of the three tributaries that run through the Installation: Accotink Creek, Pohick Creek, and Dogue Creek. A baseline watershed survey (Landgraf, 1999) identified seven main watersheds on Fort Belvoir. There are a total of 51 sub-watersheds on the main base of Fort Belvoir and seven sub-watersheds at HEC. The Proposed Action site lies within the Dogue Creek watershed (which contains 15 sub-watersheds) and in the sub-watershed 28 (Fort Belvoir, 2024a). Gunstone Cove is sub-watershed 11 of the Accotink Creek watershed (**Figure 3-3**).

The Dogue Creek watershed is the second largest watershed on the Installation and consists of areas that drain directly into Dogue Creek. Dogue Creek connects directly to the Potomac River. Fort Belvoir covers approximately 14 percent (1,755 acres) of the Dogue Creek watershed in Fairfax County (12,480 acres). The Dogue Creek watershed has the second highest percentage of wetlands (17.78 percent) on Fort Belvoir. Within the Installation, Dogue Creek watershed contains nine of the twelve housing areas, day care, administrative offices, hotels, the Dogue Creek Marina, and supporting infrastructure. All the developed areas contribute to higher impervious surface area which ultimately drain into Dogue Creek. The high percentage of impervious surface areas leads to increases in runoff velocities, pollution, and accelerates downstream erosion. Several areas within Dogue Creek watershed are under consideration for future facilities construction according to the Fort Belvoir Master Plan.

Section 303(d) of the Clean Water Act (CWA) and the United States Environmental Protection Agency's (USEPA's) Water Quality Planning and Management Regulations (40 CFR Part 30) states to identify and list water bodies in which current controls of a specified pollutant are inadequate to achieve water quality standards. Additionally, states are required to develop Total Maximum Daily Loads (TMDL) for water bodies that are not meeting water quality standards.

TMDLs represent the total pollutant loading that a water body can receive without exceeding water quality standards.

Fort Belvoir discharges into several impaired receiving surface waters including the Potomac River (VADEQ, 2022). Impaired waters of Virginia are outlined in the biennial Virginia Water Quality Assessment 305(b)/303(d) Integrated Report. According to the 2022 report, the Potomac River is a Category 4A impaired water for PCBs found in fish tissues. Accordingly, a TMDL of 1,510 grams/year has been developed for the Potomac River Basin for PCBs (Interstate Commission on the Potomac River Basin [ICPRB], 2007; VADEQ, 2022). Additionally, the Chesapeake Bay Basin has a TMDL for total nitrogen (185.9 million pounds), total phosphorous (12.5 million pounds), and sediment (6.45 billion pounds) which all contribute to impairments of the Chesapeake Bay (USEPA, 2010). Because waters of Fort Belvoir flow into the Potomac River and the Chesapeake Bay, Fort Belvoir has developed action plans to address these TMDL requirements (Fort Belvoir, 2024c; 2025a; 2025b).

The topography within the Proposed Action site is relatively flat with very minimal variations. The Proposed Action site abuts and drains into Dogue Creek along the west and south.

A natural resource team with the U.S. Army Corps of Engineers (USACE) Baltimore District, Planning Division determined there are no Waters of the United States (WOUS) or isolated wetlands and streams within the Proposed Action site (**Appendix B**). There are three unregulated stormwater grass swales that flow into Dogue Creek on the site.

3.3.1.2 Groundwater

Fort Belvoir is underlain by three main aquifers: Lower Potomac, Middle Potomac, and Bacons Castle Formation. The Lower Potomac aquifer is the primary aquifer on Fort Belvoir and in eastern Fairfax County. This aquifer exists between a layer of crystalline bedrock and a thick wedge of clay that contains interbedded layers of sand. Water in the Lower Potomac Aquifer flows to the southeast and is recharged in the western section of Fort Belvoir and to the north and west of the Installation. Depth to the water table on the Installation fluctuates based on precipitation, leakage, and evapotranspiration, but is typically 10 to 35 feet below ground surface.

3.3.1.3 Floodplains

One-hundred-year floodplains on Fort Belvoir are protected under EO 11988, Floodplain Management (May 24, 1977), which directs federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. The EO was issued in furtherance of NEPA, the National Flood Insurance Act of 1968, and the Flood Disaster Protection Act of 1973. Floodplains are defined in EO 11988 as the "lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of offshore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year." The term "100-year flood" is used to describe the recurrence interval of floods.

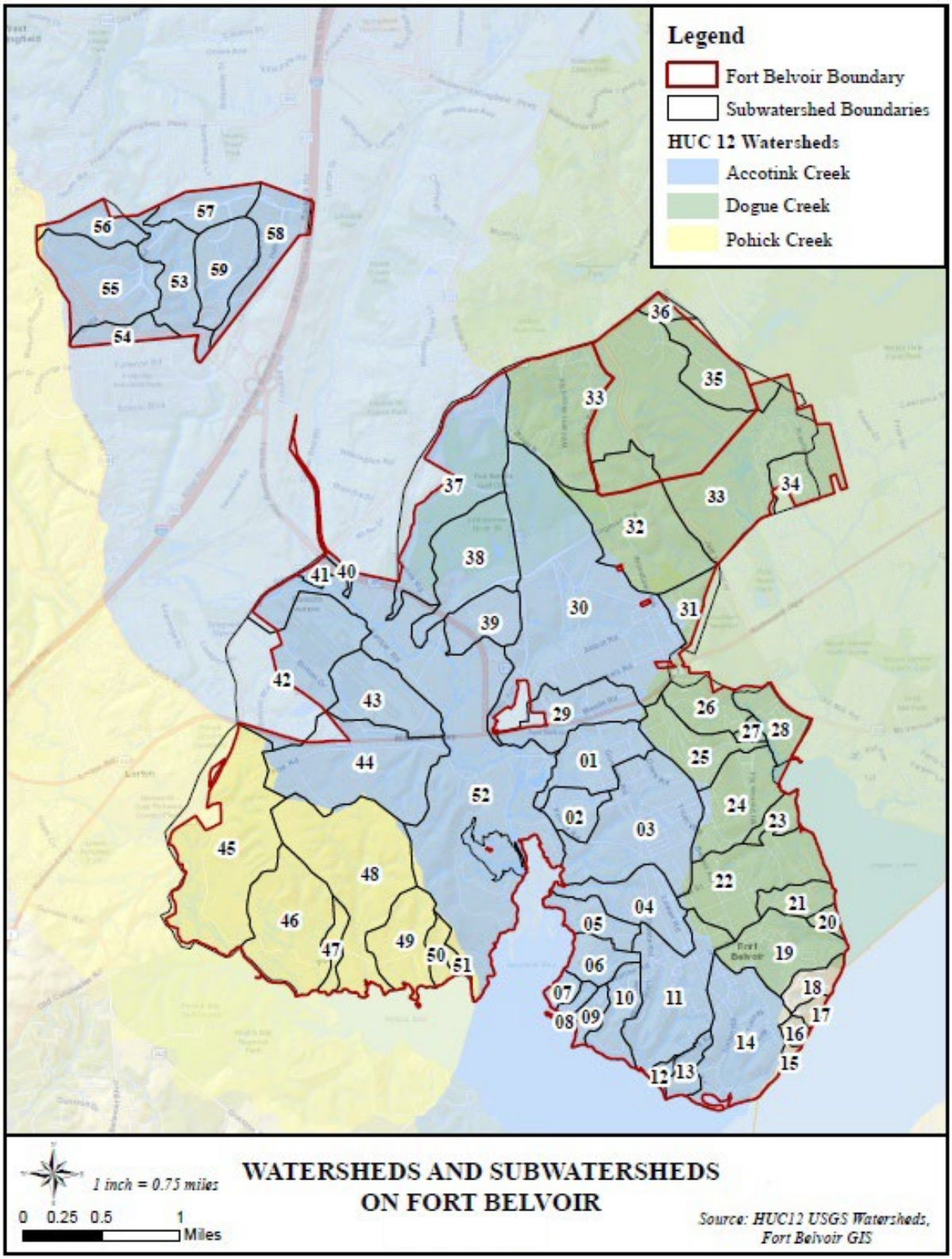

Figure 3-3: Watershed of Fort Belvoir

The 100-year recurrence interval means that a flood of that magnitude has a one percent chance of occurring in any given year. In other words, the chances that a river will flow as high as the 100-year flood stage this year is 1 in 100. A review of the Federal Emergency Management Agency (FEMA) National Flood Hazard Layer, accessed on 30 April 2025, shows the Proposed Action site is within FEMA Flood Insurance Rate Map (FIRM) area 51059C0385E (FEMA, 2025). Floodplains mapped within and around the Proposed Action site are shown on **Figure 3-4**. The Proposed Action site is within floodplain zone AE, defined as areas that are subject to the 100-year floodplain where there is a 1 percent annual chance of flooding, with baseline flood elevations (U.S. Geological Survey [USGS], 2018). A portion of the Proposed Action site along the southern extent lies outside of the floodplain.

3.3.1.4 Resource Protection Areas

EO 13508, *Chesapeake Bay Protection and Restoration*, establishes the key practices of protection and restoration of the Chesapeake Bay Watershed through meeting the goals, outcomes, and objectives set out in the *Strategy for Protecting and Restoring the Chesapeake Bay Watershed.* This document encourages coordination with state, local, and non-governmental partners to protect and restore the health of the Chesapeake Bay Watershed.

Virginia's Chesapeake Bay Preservation Act (CBPA) and its implementing Chesapeake Bay Preservation Area Designation and Management Regulations, 9 VAC 25-830, protect certain lands, designated as Chesapeake Bay Preservation Areas, which, if improperly developed, could result in substantial damage to the water quality of the Chesapeake Bay and its tributaries. Projects that occur on lands that are protected under the CBPA must be consistent with the Act and may be subject to the performance criteria for Resource Protection Areas (RPAs) as specified in 9 VAC 25-830-80. Under the CBPA, Fairfax County adopted a Chesapeake Bay Preservation Ordinance that designates RPAs and Resource Management Areas within the county.

The purpose of the RPA is to maintain or restore a vegetated buffer between development and tributaries to the Chesapeake Bay, with the assumption that such a buffer traps nutrients and pollutants in runoff and groundwater before reaching the Chesapeake Bay. RPAs include tidal wetlands; tidal shores; nontidal wetlands connected by surface flow and contiguous to tidal wetlands; or waterbodies with perennial flow, and a minimum 100-foot buffer landward of the other RPA components. Development in these areas should be avoided and/or minimized.

When impacts occur, an additional review is conducted to determine the extent of impact, as well as mitigation for the RPA infringement. Mitigation for RPA impacts typically includes the replanting of trees and/or shrubs at a predetermined ratio or the enhancement of a degraded RPA elsewhere on Fort Belvoir. RPAs are typically addressed during the wetland permitting process or the Coastal Zone Management Act (CZMA) consistency determination process.

Fort Belvoir recognizes the RPA designation but being a federal entity, is not subject to the provisions of the Fairfax County ordinance. While Fort Belvoir does not use the RPA maps produced by Fairfax County, the Army does delineate RPAs on Fort Belvoir, reflecting a spirit of compliance with the state and local requirements. Fort Belvoir designates a 100-foot RPA for

perennial streams and associated wetlands and a 35-foot RPA buffer for intermittent streams and associated wetlands (Fort Belvoir, 2023b).

The Proposed Action site is not located within an RPA. RPAs that are associated with intermittent and perennial streams and wetland areas are located west of the Proposed Action site. These RPAs are all outside of the Proposed Action site boundary (**Figure 3-5**).

3.3.1.5 Wetlands

USACE defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR Part 328). Important wetland functions include water quality improvement, groundwater recharge and discharge, storm water attenuation and storage, sediment detention, fish and wildlife habitat, and erosion protection.

EO 11990, *Protection of Wetlands* (May 24, 1977), 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. Construction in jurisdictional wetlands and WOUS is regulated by the USACE pursuant to Section 404 of the CWA as implemented in regulations contained in 33 CFR, Parts 320–330. Impacts to state waters, including wetlands, are regulated by the Virginia Water Protection Permit Program (9 VAC 25-210 §62.1-44.15:20), which serves as Virginia's 401 Water Quality Certification Program for federal Section 404 Permits.

The predominant wetland type on Fort Belvoir is palustrine forested (PFO), which tends to occur in association with the riparian areas of Accotink, Dogue, and Pohick Creeks. Wetlands generally occur along the perennial and intermittent streams that are drainages of these creeks (Fort Belvoir, 2024a).

Based on a review of the USGS National Wetland Inventory's wetlands mapper, PFO/shrub wetland areas are mapped north of the Proposed Action site along Mount Vernon Rd and west along the opposite bank of Dogue Creek across from Dogue Creek marina (USGS, 2024). **Figure 3-5** shows the wetlands mapped in the vicinity of the Proposed Action site. An April 2025 USACE water resources survey confirmed that there are no wetlands, either isolated or connected to any WOUS, located within the Proposed Action site.

3.3.1.6 Stormwater

Stormwater in the Proposed Action site is located within the Dogue Creek watershed. Stormwater is directed by the topography of the site and drains through conveyance channels and stormwater lines directly into Dogue Creek. Existing SWM structures on site include three stormwater channels, five stormwater lines, and six outfalls that drain into Dogue Creek. Three stormwater lines cross the Proposed Action site and discharge runoff solely from the adjacent River Village neighborhood.

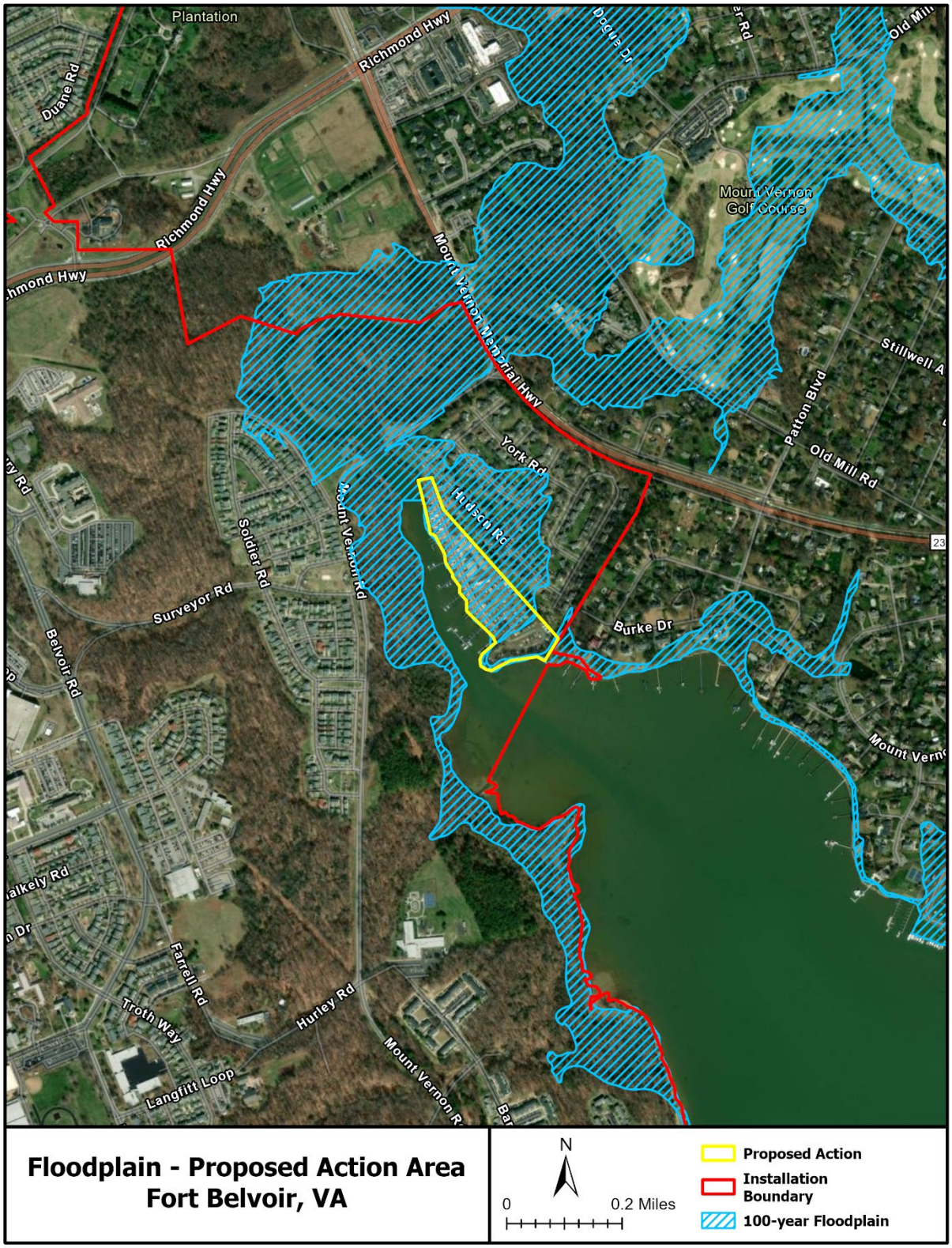

Figure 3-4: Floodplains Near Proposed Action Site

Figure 3-5: Surface Waters and Resource Protection Areas

Stormwater runoff in urban areas is one of the leading sources of water pollution in the U.S. Recognizing the importance of controlling stormwater generated from development, federal, state and local governments have adopted requirements for SWM. Water quality impacts on the waterways of Fort Belvoir relate mostly to urbanization, including issues related to bacteria, changes in stream morphology from increased impervious surface, and sedimentation. Development that increases the imperviousness of watersheds generates more stormwater runoff, leading in turn to erosion of stream channels and transport of sediment, other particulates, and dissolved nutrients to downstream surface waters. Erosion of stream channels can severely damage the channel and those features of the channel that provide habitat for fish, amphibians, aquatic insects, and other invertebrates. An excess of sediment and particulates could also degrade water quality downstream. The following regulations for SWM at Fort Belvoir apply:

Federal Requirements

- National Pollutant Discharge Elimination System (NPDES) - Section 402 of the Federal CWA, known as the NPDES program, requires permits for the discharge of pollutants from point sources and is administered by VADEQ through its Virginia Stormwater Management Program. Fort Belvoir operates a municipal separate storm sewer system (MS4) pursuant to the NPDES regulations, and discharges stormwater runoff under VPDES Stormwater Permit No. VAR040093. Fort Belvoir also has an ISW Permit, No. VA0097221. A portion of the Proposed Action site is covered by the ISW permit and an ISW outfall exists within the Proposed Action site. Stormwater runoff generated by development on Fort Belvoir, including the Proposed Action, would be included under these permits, provided the proponent complies with its terms and conditions and coordinates with the appropriate personnel on Fort Belvoir.

- Energy Independence and Security Act (EISA), Section 438 – federal projects 5,000 square feet in size or greater are required to maintain or restore pre-development hydrology. Guidance provided by the USEPA promotes retaining rainfall on-site through infiltration, evaporation/transpiration, and re-use to the same extent as occurred prior to development. Section 438 requires that LID or green infrastructure, including reducing impervious surfaces and using vegetative practices, porous pavements, cisterns, and green roofs be incorporated into development plans.

- LID is a SWM approach that emphasizes the retention of native vegetation and soils, reduces runoff, and seeks to approximate predevelopment hydrologic conditions. LID provides an effective alternative to more traditional SWM approaches that rely on engineered structures. When properly used, LID can be cost effective by reducing the reliance on hard structures. It can make more efficient use of land resources by reducing the need for large, centralized stormwater basins, decreasing the total amount of runoff generated, and providing water-quality improvements.

VADEQ Requirements

- Virginia Erosion and Stormwater Management Regulation (9 VAC 25-875)
    - General Permit for Discharges of Stormwater from Construction Activities (9 VAC 25-880)

    - Virginia BMP Clearinghouse
    - Virginia Runoff Reduction Method
- Virginia Stormwater Management Handbook effective July 1, 2024
    - ESC
    - Virginia ESC Handbook
- Chesapeake Bay Preservation Area Designation and Management (9 VAC 25-830-130)
    - Construction activities disturbing one or more acres, requires:
        - General Permit for the Discharge of Stormwater from Construction Activities
        - SWPPP, developed by the project proponent, requiring SWM measures as included in the approved site plan, and demonstration of how these measures would be maintained, identifying the responsible entity throughout duration of construction.

Installation Requirements

- Fort Belvoir Directorate of Public Works (DPW) reviews all construction site plans involving 2,500 square feet or more of earth disturbance for compliance with the MS4 conditions, state requirements for SWM and erosion/sediment control, and the Fairfax County Public Facilities Manual. This area once construction is completed would be covered under the Industrial Stormwater (ISW) Permit, not the MS4 Permit. As such there is regular water quality sampling at the representative outfall (RO-016) in this area. Construction site plans, SWPPP, and ESC documents would need to be assess against both MS4 and ISW requirements to ensure continuing compliance. A Notice of Proposed Changes will be submitted from DPW to VDEQ following confirmation of the Proposed Action to ensure ISW Permit is updated to reflect new site conditions.

3.3.1.7 Coastal Zone

The CZMA of 1972 (16 USC § 1451 *et seq*., as amended) aids the states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. Section 307 (c)(1) of the CZMA Reauthorization Amendment stipulates that federal projects that affect land uses, water uses, or coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally approved coastal management plan. Virginia has developed and implemented a federally approved Coastal Resources Management Program (CRMP) describing current coastal legislation and enforceable policies. Virginia's Coastal Zone includes all of Fairfax County, including Fort Belvoir. VADEQ regulates activities that are proposed within the CZMA Program through federal consistency requirements. Under these requirements, applicants for federal and state licenses or permits must certify their proposed activity will be conducted in a manner consistent with the State's CZMA Program. A Coastal Zone Management Act Federal Consistency Determination has been prepared for this project and is included in **Appendix C**.

3.3.2 Environmental Consequences

3.3.2.1 Threshold of Significance

The threshold of significance for groundwater and surface water quality impacts would be exceeded if a proposed action would result in changes to regional groundwater patterns or depletion of groundwater, alteration of local surface water, or degradation of water quality such that water quality standards would be exceeded. The threshold of significance for wetlands, RPAs, and floodplains would be exceeded if a proposed action would result in degradation of wetlands without mitigation, or result in a permanent, adverse change to the movement of surface water such that noticeable increased flooding occurs. For stormwater resources, the threshold of significance, would be exceeded if a proposed action resulted in noncompliance in stormwater permitting, regulations, or resulted in the degradation of water quality from increased flow. For coastal zone resources, the threshold of significance would be exceeded if a proposed action would not be consistent with Virginia's Coastal Resources Management Policies.

3.3.2.2 Impacts of Proposed Action

3.3.2.2.1 Surface Waters and RPAs

There are no streams or associated RPAs within the Proposed Action site. RPAs in the vicinity of the Project Action site would be avoided and incur no impact. Construction of the Proposed Action may result in short-term, minor, direct, adverse impacts to surface water from soil disturbance, vegetation clearing, and grading during construction. Disturbance of soils during construction increases the potential for erosion and discharge of sediment-laden stormwater to downstream receiving waters. However, appropriate ESC and SWM pursuant to the construction SWPPP and the VPDES Construction General Permit would minimize any detrimental impacts.

Prior to construction, an ESC and a SWM Plan would be developed that specify measures that would be put in place to avoid or minimize erosion and sedimentation. Such measures may include, but are not limited to, silt fencing, use of synthetic hay bales, temporary sediment traps, and other similar measures. The Proposed Action would be coordinated and approved through the Fort Belvoir DPW, and routine inspections would be conducted throughout construction to ensure compliance.

Fort Belvoir has developed the Chesapeake Bay TMDL Action Plan per the requirements of 9 VAC 25-890-40 Part II.A (Fort Belvoir, 2024). In compliance with this, permanent or temporary soil stabilization would be applied to denuded areas within seven days after final grade is reached on any portion of the site. In addition, nutrients for re-vegetated areas would be applied in accordance with manufacturer's recommendations or any approved Nutrient Management Plan and not be applied during rainfall events.
Operation of the Proposed Action would result in long-term, minor, direct, adverse impacts to surface water due to increased transient traffic (greater potential for spills, human error in equipment [RV] maintenance, etc) and increased impermeable pavement (greater runoff potential). As ESC and SWPPP's are developed during construction and for final site plans, project team should coordinate with DPW to devise site layout/BMPs that lead to the least surface water impact. Pre-development levels of off-site discharge are not considered attainable due to major change in site operation/traffic.

3.3.2.2.2 Groundwater

Under the Proposed Action, no impacts are expected to occur to groundwater. The construction of the Proposed Action would result in a slight increase of impervious surface area from the construction of parking pads and paved roads. This would reduce the infiltration of stormwater into the shallow, near-surface aquifer; however, LID measures would be employed to minimize this impact. No withdrawal of groundwater would be necessary to construct or operate the proposed travel camp.

3.3.2.2.3 Floodplains

The Proposed Action would permanently impact approximately 6.5 acres of the 100-year floodplain of Dogue Creek, resulting in minor, direct, long-term impacts to floodplains. In accordance with EO 11988, the Army evaluated the Proposed Action impacts to floodplains and considered any practicable alternatives to the maximum extent possible. Alternatives 1, 2 and 3 were evaluated but dismissed from further evaluation and not considered practicable. As a result, a Finding of No Practicable Alternative (FONPA) is included as part of the Proposed Action and can be found in **Appendix D**. The Proposed Action site is bounded by the River Village neighborhood along the northeastern to eastern edge and by Dogue Creek along the south and west. A majority of the Proposed Action site lies within the floodplain, and it is constrained by these boundaries from being shifted outside of the floodplain. Additionally, this area is already developed. The FONPA includes an evaluation of impacts to the floodplain and mitigation measures to be implemented. Under the Proposed Action, the Army would implement BMPs and LID measures to reduce the potential for adverse impacts on the floodplain.

3.3.2.2.4 Wetlands

There would be no impacts to wetlands as a result of the construction or operation of the Proposed Action. There are no wetlands within the Proposed Action site. To prevent indirect impacts to wetlands in the vicinity of the Proposed Action site, previously described ESC and SWM plans to avoid or minimize adverse impacts to surface water would also avoid or minimize impacts to wetlands. In addition, permanent SWM features would be employed using LID measures to minimize impacts from the increase in impervious surfaces at the Proposed Action site.

3.3.2.2.5 Stormwater

Under the Proposed Action, there could be short-term, minor, direct, adverse impacts to stormwater from construction activities due to ground disturbance that may lead to an increase in sediment runoff. Those potential impacts would be minimized through compliance with the terms of Fort Belvoir's Industrial Stormwater Permit VA0097221 through existing outfall RO-016. Construction activities will be dually monitored between ISW and MS4 permit terms. Under the terms of the permit, projects that disturb more than one acre of land are required to prepare and implement an ESC Plan, a SWPPP, a SWM Plan, and a Construction General Permit, to be reviewed and approved by Fort Belvoir's DPW and by VADEQ.

Because the project is located within a Chesapeake Bay Preservation Area and would disturb more than 2,500 square feet, the contractor would also be required to prepare an ESC Plan in compliance with the Virginia Erosion and Sediment Control Law (9 VAC 25-875) and in conformance with the Virginia Stormwater Management Handbook effective July 1, 2024. The plan would be submitted to Fort Belvoir's DPW for review and approved by VADEQ's Northern Regional Office and routine inspections would be conducted throughout construction to ensure compliance with these permits. The contractor would also obtain a Construction General Permit and prepare and implement a construction SWPPP to minimize sedimentation to downstream receiving water bodies.

Operation of the Proposed Action may have minor, long-term, direct and adverse impacts to stormwater due to increased amounts of impervious surfaces on the site. Permeable surfaces would be employed where feasible to reduce runoff and promote infiltration. The Proposed Action includes concrete pads, a building, parking area, paved roadways and vegetated areas. Use of natural vegetation areas would help minimize the amount of impervious areas constructed. In addition, compliance with EISA Section 438 through the incorporation of LID measures in the design would ensure that the Proposed Action would in as little of an increase in runoff as possible from stormwater runoff. Examples of potential LID measures include underground detention, multiple bioretention facilities, infiltration berms or beds, porous pavement, or other innovative stormwater design options.

3.3.2.2.6 Coastal Zone

Both the construction and operation of the Proposed Action would be consistent with Virginia's CRMP enforceable policies. Non-point source pollution would be managed with temporary ESC measures defined in the approved ESC Plan or permanent SWM BMPs, as appropriate. The Coastal Zone Management Act Federal Consistency Determination submitted to Virginia is included in **Appendix C**. Complete results of this coordination, including recommendations from VADEQ, are included in **Appendix C**.

3.3.2.3 Impacts of No Action Alternative

Under the No Action Alternative, no adverse impacts would occur to water resources. The current level of stormwater infiltration and runoff discharge would occur. In addition, no effects to coastal zones or wetlands would occur without any new development associated with the Proposed Action.

3.4 BIOLOGICAL RESOURCES

3.4.1 Affected Environment

Located on the western shore of the Potomac River, within the larger metropolitan area of Washington, D.C., Fort Belvoir sustains its military mission while maintaining relatively large areas of native vegetation in terms of size, diversity, and regional position. DoDI 4715.03, allows DoD Installations to provide a "Special Natural Area (SNA)" designation to specific areas of the Installation that contain natural resources that warrant special conservation efforts, if consistent with military mission. Fort Belvoir possesses a variety of ecologically significant natural resource

areas. These include rare, threatened, and endangered species, their associated habitats, extensive wetlands, regionally significant watersheds, and locally important wildlife migratory corridors. The importance of conserving these on-post resources is underscored by the increasing urbanization locally, and throughout the Chesapeake Bay watershed. (Fort Belvoir, 2024a). These large areas of native vegetation afford a contiguous band of wildlife habitat within and extending outside of the Installation. Fort Belvoir's natural resources management strategy, outlined in its Integrated Natural Resources Management Plan (INRMP), prioritizes preserving the native diversity of communities and species within communities and implements an ecosystem-based natural resources management program (Fort Belvoir, 2024b).

There are five SNAs on Fort Belvoir, (**Figure 3-6**). SNA 5 (Accotink Creek Corridor) was designated as a SNA in 2005. This predominantly forested 191-acre area serves as a wildlife migratory corridor and supports potential habitat for federally listed small whorled pogonia (*Isotria medeoloides*) and several other species of management concern (Fort Belvoir, 2024a).

The SNA 2 (Jackson Miles Abbott Wetland) is one of closest SNAs to the Proposed Action, at over a half mile to the north. SNA 2 was established in 1988 to protect an area of sensitive wetlands along Dogue Creek, and to provide public access to an important bird watching area on post. The area is 146 acres and is part of a larger forested wetland system that continues beyond Fort Belvoir's boundary into Humphries Engineer Center, and into Fairfax County's Huntley Meadows Park. The area includes habitat for several federal- and state-listed threatened and endangered bat species, habitat for federal-listed threatened small whorled pogonia, habitat for state-listed threatened wood turtle habitat, and habitat for multiple Partners in Flight (PIF) Species of Concern bird species (Fort Belvoir, 2024a).

SNA 1 (Accotink Bay Wildlife) is over a half mile away from the site to the west and was established in 1979 to protect areas of recognized ecological significance, most notably the freshwater tidal marsh and climax hardwood forest adjacent to Accotink Bay. The area is 1,945 acres and encompasses rare tidal wetland habitat for several species.

Biological resources discussed in the following sections include vegetation, wildlife, rare, threatened and endangered species (RTE), and PIF habitat. Relevant regulations and policies are also discussed when applicable. The area of analysis for biological resources focuses on the Proposed Action site, considering a broader geographic range when appropriate.

3.4.1.1 Vegetation

The Proposed Action site is nearly all developed area. There is a small section of the site on the southeastern edge that is vegetated with thick brush. However, the area LOD is marked as residential in the 2024 INRMP (Fort Belvoir, 2024a), with no true sections of forests. The vegetation that exists on the site is likely for shoreline stabilization and erosion control, with small patches all along the edge of Dogue Creek.

No tree planting mitigations have been done at the Proposed Action site, and no tree planting mitigation sites will be impacted by the Proposed Action.

Fort Belvoir's *Tree Removal and Protection Policy* requires the protection of existing trees and, where tree loss is unavoidable, mitigation for the removal of trees must be performed unless expressly exempted. In-kind mitigation measures include replacing any trees four inches or greater at diameter breast height (dbh) that are removed with the planting of two new trees. Out-of-kind compensatory mitigation, such as environmentally beneficial restoration, enhancement, or preservation measures may be completed if in-kind mitigation is not a feasible option (Fort Belvoir 2018). Pursuant to the *Tree Removal and Protection Policy*, a Tree Protection Plan must be prepared in accordance with Fort Belvoir DPW requirements and included as part of the 35 percent design submittal for construction projects. The Proposed Action would minimize tree clearing and maximize on-site tree plantings. In addition, the Army would continue to work closely with Fairfax County on a Memorandum of Understanding that would include identifying additional tree replanting opportunities throughout the Accotink Watershed, and such areas may include Fairfax County Public School properties and outreach programs.

3.4.1.2 Wildlife

Installation-wide surveys have documented diverse wildlife species occurring on Fort Belvoir. It provides the potential habitat for 43 species of mammals, 263 species of birds, 32 species of reptiles, 27 species of amphibians, and 60 species of fish. More than 2,500 acres of land have been set aside on Fort Belvoir for wildlife including the SNAs displayed in **Figure 3-6.**

A number of aquatic species and their habitat exist in the streams, creeks, and wetlands on Fort Belvoir. A full listing of species and habitat are found in the Fort Belvoir's 2024 INRMP (Fort Belvoir, 2024a). Most of the Installation's smaller tributary streams tend to have a less diverse fish assemblage, most likely due to limitations in habitat and possibly water quality problems from stormwater or other inputs. Also, the small size and intermittent flow conditions of most of the smaller tributaries preclude all but the smallest fish species from inhabiting the smaller streams.

The Proposed Action site is primarily developed land with a small portion of undeveloped upland on the southern portion. These types of habitats support a variety of species found on Fort Belvoir including the eastern chipmunk (*Tamias striatus*) and eastern cottontail (*Sylvilagus floridanus*) (Fort Belvoir, 2024a). A northern water snake (*Nerodia sipedon sipedon*) was spotted during the wetland delineations conducted by USACE along with many ospreys (*Pandion haliaetus*).

Dogue Creek has had river herring documented in it along with several other rare species. Accotink Creek, along with its tributaries and associated floodplain wetlands, support amphibian species including spring peepers (*Pseudacris crucifer*), American toads (*Bufo americanus*), Fowler's toads (*Bufo woodhousii fowleri*), and bullfrogs (*Rana catesbeiana*).

3.4.1.3 Federally Listed Rare, Threatened and Endangered Species

Under the Endangered Species Act (ESA) of 1973, plant and animal species in danger of extinction throughout all or a significant part of their range are listed as endangered. Species that are likely to become endangered within the foreseeable future are listed as threatened.

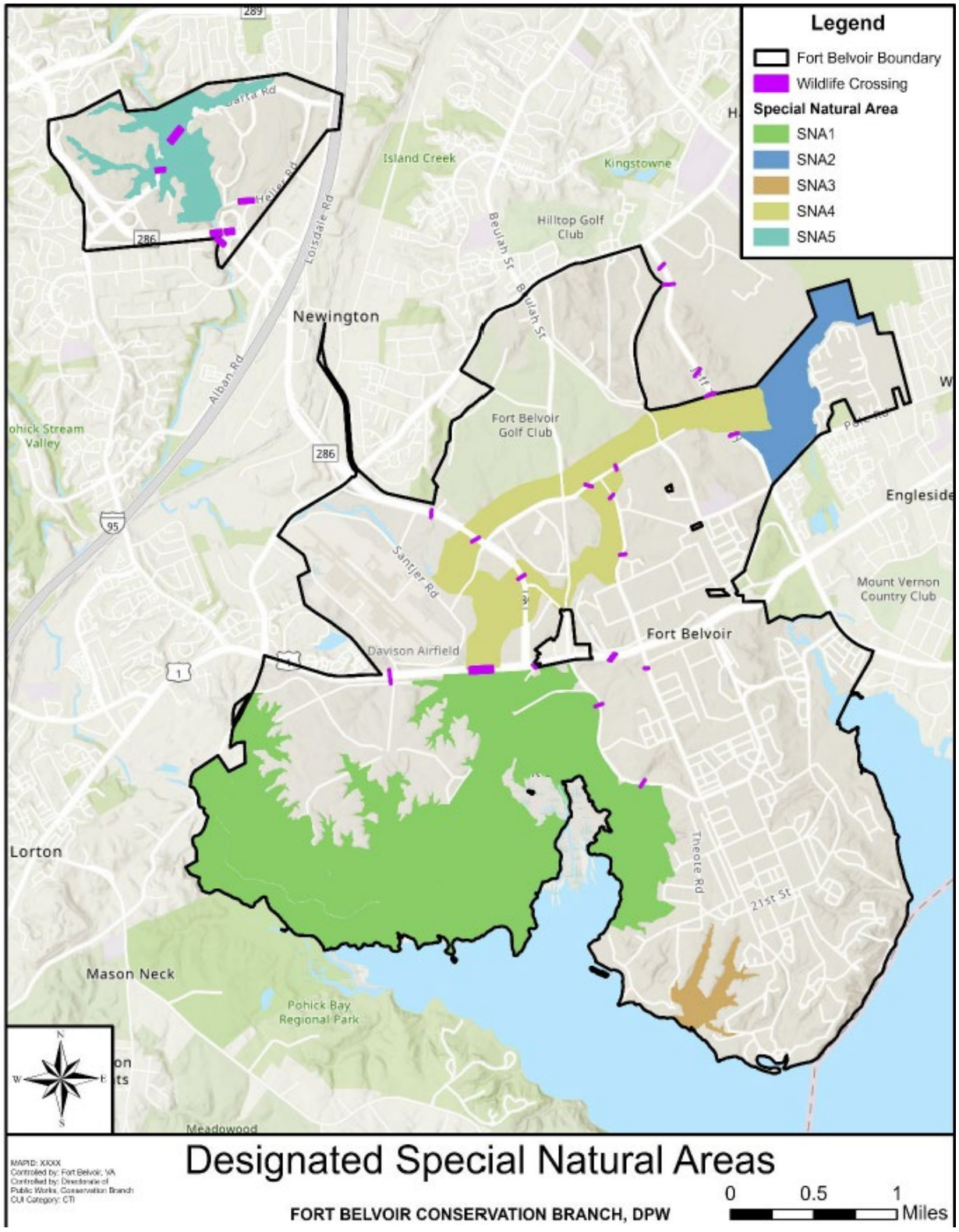

Figure 3-6: Special Natural Areas of Fort Belvoir

The USFWS is responsible for administering the ESA for terrestrial and freshwater organisms, as may be found within the Proposed Action site and its vicinity. The ESA establishes the federal government's responsibility for protection and recovery of species considered to be in danger of extinction.

The ESA requires federal agencies, in consultation with the USFWS to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. Critical habitat can include areas not occupied by the species at the time of the listing but are essential to the conservation of the species. The Sikes Act provides for cooperation by the Department of the Interior and DoD with state agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the U.S.

Section 7 of the ESA requires federal agencies to request information whether any species which is listed or proposed to be listed may be present in the area of such proposed action for any project that is conducted, permitted, funded, or licensed by any federal agency. The Information for Planning and Consultation (IPaC) resource list can be found in **Appendix E**.

As reported through the USFWS Resource List, there are no critical habitats or wetlands within the project site. According to a screening of the Proposed Action site using the USFWS' IPaC online tool, the northern long-eared bat (NLEB [*Myotis septentrionalis*]), listed as an endangered species under the ESA, may occur in forested areas on or near the Proposed Action site (USFWS, 2025). In addition, the tricolored bat (*Perimyotis subflavus*) which is proposed to be listed as endangered is shown as potentially occurring within the Proposed Action site.

White-nose syndrome, a fungal disease known to affect bats, is the most severe and immediate threat to NLEB and tricolored bat survival and is the basis for the listing of the species' status. During the active season (April 1 to October 31), bats roost singly or in colonies in cavities, underneath bark, crevices, or hollows of both live and dead trees and snags. Fort Belvoir has identified tricolored and NLEB bats on their Installation via acoustic surveys (Fort Belvoir, 2024a).

The monarch butterfly is also listed in the IPaC screening as a candidate species and under consideration for official listing as threatened. Although there are generally no Section 7 requirements for candidate species, USFWS encourages agencies to take advantage of opportunities that may conserve the species. Primary threats include loss and degradation of habitat, use of herbicides and pesticides, urban development, and climate change. Conservation efforts include protection of the obligate milkweed plants (primarily *Asclepias* sp.) monarchs use for egg deposition and larvae feeding as well as other nectar resources for adults. Critical habitat has not been designated for the monarch.

3.4.1.4 State Listed Species

Virginia has promulgated a state endangered species act that provides endangered and threatened listings for species vulnerable to extinctions at the state level. The Virginia statute (4 VAC 15-20-130) prohibits the taking, transportation, possession, sale, or offer for sale within the state of any species listed on the federally endangered species list or any other species designated by the state

board. Virginia also provides protection for plant and insect species through Chapter 10 §3.2- 1000 of the Code of Virginia. It is the role of Virginia's Department of Conservation and Recreation, Division of Natural Heritage to maintain listings and rarity (i.e., conservation) rankings of rare plant and animal species and ecological communities. Unlike endangered and threatened listings, rare species listings and their rankings are not legal designations and do not provide any protective status, but, rather, are used to prioritize resources for conservation.

The Virginia Department of Wildlife Resources Fish and Wildlife Information Services search report showed the species in **Table 3-3** as potentially present within a three-mile radius of the Proposed Action site. Thirty-two (32) of a total 704 occurring known species are listed as Tier 1 and II of state-listed concern. Of these species, Fort Belvoir is known to have seven state-listed species.

Table 3-3: Status of State-listed Species within Three Miles of the Proposed Action Site

Common Name	Scientific Name	Status	Known to Occur at Belvoir
NLEB	*Myotis septentrionalis*	FE, ST	X
Atlantic Sturgeon	*Acipenser oxyrinchus*	FE, SE	
Yellow Lance	*Elliptio lanceolata*	FT, ST	
Little Brown Bat	*Myotis lucifugus*	SE	X
Tricolored Bat	*Perimyotis subflavus*	FP, SE	X
Monarch Butterfly	*Danaus plexippus*	FP	X
Regal Fritillary	*Speyeria idalia idalia*	FP	
Brook Floater	*Alasmidonta varicosa*	SE	
Wood Turtle	*Glyptemys insculpta*	ST	X
Peregrine Falcon	*Falco peregrinus*	ST	X
Shrike Loggerhead	*Lanius ludovicianus*	ST	
Henslow's Sparrow	*Centronyx henslowii*	ST	
Appalachian Grizzled Skipper	*Pyrgus wyandot*	ST	
Migrant Loggerhead Shrike	*Lanius ludovicianus migrans*	ST	

**FE=Federally endangered; FT= Federally Threatened; FP= Federally Proposed; SE=State Endangered; ST=State Threatened*

3.4.1.5 Partners in Flight (PIF)

The DoD PIF program uses a cooperative network of natural resources personnel from military installations across the U.S. to sustain and enhance the military mission through proactive, habitat-based conservation and management strategies that maintain healthy landscapes and training lands (https://partnersinflight.org/). The DoD PIF uses voluntary partnerships at local, state, regional, national, and international levels to share information and develop ecosystem-based, proactive management programs and programmatic priorities that aim to "keep common birds common" and help recover species at risk. The USFWS, as well as state wildlife agencies such the Virginia Department of Wildlife Resources, through the state nongame program, are also partners in this program.

As part of the PIF Program, DoD installations are encouraged to incorporate elements of the PIF Bird Conservation Strategy into their INRMPs. Such elements include habitat management

practices such as prescribed burning and timber management programs. Designation of regional PIF priority bird species is the result of a cooperative/coordinated effort among various federal, state and private organizations. Fort Belvoir has designated approximately 4,200 acres of PIF habitat within its boundaries, most of it within Pohick Bay and the 234-acre SNA 2 along Dogue Creek, both areas of high-quality habitat located within the Main Post. These large areas of habitat not only are valuable in and of themselves, but also provide for ecological connectivity through the Fort Belvoir to other regional habitats (Fort Belvoir, 2015b).

PIF Species of Concern status and applicable conservation guidelines are part of a broader designation identified by the INRMP as Fort Belvoir Breeding Birds of Management Concern, and includes USFWS Birds of Conservation Concern, DoD PIF Mission Sensitive Species and Fort Belvoir Habitat Indicator Species in addition to the PIF Species of Concern for Bird Conservation Region 30 (New England/Mid-Atlantic Coast). The six birds on the PIF Species of Concern Watch List that occur within the Bird Conservation Region 30 in which Fort Belvoir sits are: black billed cuckoo (*Coccyzus erythropthalmus*), Kentucky warbler (*Geothlypis formosa*), prairie warbler (*Setophaga discolor*), prothonotary warbler (*Protonotaria citrea*), wood thrush (*Hylocichla mustelina*), and eastern whip-poor-will (*Antrostomus vociferus*). Fort Belvoir is using three of the species – prairie warbler, prothonotary warbler, and wood thrush – as indicator species in the Installation's wildlife management program. The Proposed Action site is a part of the Potomac River Eagle Concentration Area marked as a bald eagle management area in the 2024 Fort Belvoir INRMP (Fort Belvoir, 2024a). In addition, the portion of Dogue Creek the marina sits on is listed as an RPA.

3.4.2 Environmental Consequences

3.4.2.1 Thresholds of Significance

The threshold of significance for biological resources would be exceeded if a Proposed Action would jeopardize the continued existence of any federally listed, threatened, or endangered species or result in destruction of critical habitat; decrease the available habitat for commonly found species to the extent that the species could no longer exist in the area; eliminate a sensitive habitat, such as breeding areas, habitats of local significance, or rare or state-designated significant natural communities needed for the survival of a species.

Potential impacts to plants, wildlife, and fish are evaluated in accordance with applicable regulations including, but not limited to, the ESA, the Fish and Wildlife Conservation Act of 1980, the Migratory Bird Treaty Act, and EO 13112 and EO 13751on Invasive Species. The Sikes Act provides for cooperation by the Department of the Interior and DoD with state agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the U.S. The area of analysis for biological resources includes the Proposed Action site.

3.4.2.2 Impacts of Proposed Action

3.4.2.2.1 Vegetation

Under the Proposed Action, short-term, minor adverse effects would occur to vegetation. Removal of approximately 0.5 acres of vegetation for construction of the tent area and infrastructure under the Proposed Action would result in long-term, minor, adverse effects. The vegetation would be removed and replaced with primarily impervious surface for the RVs and camp sites. The current vegetation is a canopy of young trees with a thick understory. Landscape trees along the shoreline would be planted as part of the project.

Vegetation removal would be offset by a combination of replanting within the Proposed Action site whenever possible through landscaping and offsite mitigation efforts in accordance with Fort Belvoir's Tree Removal and Protection Policy, requiring a 2:1 replacement ratio. The replacement ratio reflects the concept that trees planted in urban forest situations only survive for an average of seven years and trees being replaced are generally far larger than trees planted as in-kind, therefore the trees are replaced at a 2:1 ratio. However, landscaped trees are not equivalent to forested habitat and therefore an adverse impact would still be incurred. If it is not possible to plant the required number of replacement trees, project-related alternatives such as environmentally beneficial restoration, enhancement, or preservation measures may be done. DPW approval of out-of-kind, compensatory mitigation is required, and funding must be equivalent to that required to plant the remaining trees. For example, the Army would continue to work closely with Fairfax County on a Memorandum of Understanding that would include identifying additional tree replanting opportunities within the same watershed.

Following construction, the Proposed Action site would be landscaped, per a DPW approved landscape plan, with native grass, shrubs and tree species coordinated with the Fort Belvoir Environmental Division staff to ensure that no invasive species would be introduced, and planting enhances wildlife habitat in a low-maintenance manner consistent with master planning objectives. Some tree stands surrounding the tents could be retained to provide a cover and shading for campers.

3.4.2.2.2 Wildlife

Under the Proposed Action, long-term and short-term, minor adverse effects would occur to wildlife. During construction of the Proposed Action, equipment noise, ground disturbance, and vegetation removal would temporarily displace individuals of common wildlife species residing in the LOD. There may be limited mortality to individuals that are not able to relocate during construction. Population-level impacts would not reasonably occur due to the relatively small size of the construction area in relation to the overall size of Fort Belvoir. Additionally, most mobile species are able to safely avoid equipment. Therefore, construction activities associated with the Proposed Action are expected to result in short-term, minor, direct, adverse effects on terrestrial wildlife resources located within the immediate area.

Long-term, minor, adverse effects would occur with the loss of habitat to local wildlife. Local vegetation dwellers would be displaced and lose a percentage of their habitat for nesting and for foraging foods. Some species such as chipmunks would be less impacted as others as some mature trees may remain within the Proposed Action site for them to live and nest in. The addition of lighting to the area also has the potential to disturb wildlife and their natural patterns.

To minimize impacts on birds, construction activities should avoid cutting and removal of vegetation from 1 April to 15 July. If cutting and removal occurs during this time frame, a survey for birds and active bird nests is recommended. No migratory bird, active nest, egg, or hatchling should be disturbed. Additional lighting to the area can contribute to the disruption of migration to birds, which can become disoriented by the lighting and lose their path. However, The Proposed Action would be a very small contribution to the overall, light-polluted area of Fort Belvoir. In addition, lighting is known to disrupt the breeding patterns of some insects such as fireflies.

3.4.2.2.3 Rare, Threatened, & Endangered Species

Under the Proposed Action, short-term, negligible adverse effects would occur to RTE species. There are no known RTE species within the Proposed Action site. USFWS concurrence was received confirming that northeastern bulrush would not be affected and that monarchs are indiscriminate and therefore would not be disturbed (**Appendix E**).

The Proposed Action site includes habitat that is mapped as potentially housing NLEB and tricolored bats. To protect nesting bat species, no trees over three inches dbh would be removed within the Proposed Action site between April 1 and September 30 in accordance with current USFWS guidelines and corresponding U.S. Army NLEB protection documents promulgated to protect the NLEB species. This would also avoid tree clearing during pup season, protecting bat species that are not RTE.

The Indiana bat and the tricolored bat have an active season similar to that of the NLEB. The conservation measures outlined by Virginia include time of year restrictions that fall within the bounds of restrictions already established for the NLEB. Therefore, the conservation measures required for protection of the NLEB would be adequate for protection of the state-listed bat species.

USFWS also concurred with a not likely to adversely affect determination for all three bat species, with the assumption that tree removal would occur when the bats are unlikely to be present (April 1 – September 30) (**Appendix E**).

3.4.2.3 Impacts of No Action Alternative

Under the No Action Alternative, no impacts would occur to wildlife. The forested area would remain in its same state, causing no effects to wildlife or biological resources.

3.5 HAZARDOUS WASTE AND TOXIC MATERIALS

3.5.1 Affected Environment

Hazardous and toxic materials or substances are generally defined as materials or substances that pose a risk (i.e., through either physical or chemical reactions) to human health or the environment. Regulated hazardous substances are identified through several federal laws and regulations. The most comprehensive list is contained in 40 CFR 302, *Designation, Reportable Quantities and Notification*, and provides quantities of these substances that, when released to the environment, require notification to a federal agency. Further, hazardous wastes, defined in 40 CFR 261.3, are

considered hazardous substances. Generally, hazardous wastes are discarded materials (e.g., solids or liquids) not otherwise excluded by 40 CFR 261.4 that exhibit a hazardous characteristic (i.e., ignitable, corrosive, reactive, or toxic), or are specifically identified within 40 CFR 261. 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, lead-based paint (LBP), and PCBs. The USEPA is given authority to regulate these industrial chemicals by the Toxic Substances Control Act, Title 15 USC Section 53. The USEPA has established regulations regarding asbestos abatement and worker safety under 40 CFR Part 763, with additional regulation concerning emissions (40 CFR Part 61). The disposal of PCBs is addressed in 40 CFR Parts 750 and 761.

Fort Belvoir conducts its hazardous waste management program in compliance with the Resource Conservation and Recovery Act (RCRA), 40 CFR parts 239 through 282, and 9 VAC 20-60. Fort Belvoir has a Hazardous Waste Management/Waste Minimization Plan and a Spill, Prevention, Control, and Countermeasure Plan. Fort Belvoir DPW also files annual hazardous material and toxic chemical reports in compliance with the Emergency Planning and Community Right-to-Know Act.

3.5.1.1 Regulations for Asbestos and Asbestos Containing Material

The Proposed Action includes demolition of Building 1696. This building, a 7,500 square foot, one-story wood structure with a vinyl exterior and asphalt shingle roof, is currently used as the marina office. It was originally constructed in 1943, thus predating early 1970's regulations first enacted to protect human health and safety from the dangers of this material. Although most forms of asbestos are no longer found in modern building materials, older buildings are subject to regulation for legacy materials.

The Clean Air Act (CAA), enacted in 1970, identified asbestos as a hazardous air pollutant. The Toxic Substances Control Act of 1976 defines asbestos as the asbestiform varieties of chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite/grunerite); anthophyllite; tremolite; and actinolite.

The CAA National Emission Standards for Hazardous Air Pollutants regulations at 40 CFR Part 61, Subpart M specify work practices for asbestos to be followed during demolition and subsequent waste disposal. The regulations require the owner of the building to notify the appropriate state agency before any demolition of any building that could contain asbestos or asbestos containing material. A building inspection conducted on 28 September 1994 concluded that the building does not contain asbestos (Fort Belvoir, 1994).

3.5.1.2 Installation Restoration Program

The Fort Belvoir Installation Restoration Program (IRP) operates in coordination with the U.S. Army Environmental Command and USACE to restore former military training areas, waste sites, and petroleum areas through regulatory closure. The IRP is a comprehensive program designed to address contamination from past activities and restore Army lands to useable conditions. It is one of two programs established under the Defense Environmental Restoration Program to identify,

investigate, and clean up hazardous substances, pollutants, and contaminants that pose environmental health and safety risks at active military installations and formerly used defense sites. The IRP was established in 1975 and is achieving successful restoration of more than 11,000 identified active Army environmental cleanup sites.

The IRP response actions (i.e., site identification, investigation, removal actions, remedial actions, or a combination of removal and remedial actions) correct other environmental damage (such as the detection and disposal of unexploded ordnance [UXO]) that poses an imminent and substantial endangerment to the public health or welfare or to the environment. IRP actions are conducted according to the provisions of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), EOs 12580 and 13016, and the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR 300).

In 2024 a HHRA was completed at the Dogue Creek Marina property to estimate the potential human health risk (cancer) and hazards (non-cancer) associated with site-related chemical constituents in the soil. The purpose of the HHRA was to quantitatively characterize the human health risk associated with current and reasonably expected future exposure to soil contaminants at the marina site. The marina site was established circa 1937 for military training and exercises and was included in the larger 42.5-acre Congressional Demonstration Area that straddled Dogue Creek. Munitions and munitions-related materials used during these demonstrations included signal rockets, aerial bombs, smoke grenades, and blank ammunition (USACE, 2024).

The HHRA assessed the results of 26 surface and subsurface soil samples collected in 2024 from different areas within the site. The samples were analyzed for volatile and semi-volatile compounds, pesticides, PCBs, and metals. These analytical results were then used to identify chemicals of potential concern (COPCs) to be evaluated in the HHRA (USACE, 2024). While one sample exceeded screening thresholds for arsenic and two for PCBs, the HHRA found no unacceptable cancer risk to human receptors at the site from exposure to COPCs in the soil, and no unacceptable (non-cancer) hazards to human receptors from assumed exposures to COPCs in soils (USACE, 2024).

3.5.1.2.1 Solid Waste Management Unit (SWMU)

A SWMU is defined in the 1984 Hazardous and Solid Waste Amendments to RCRA as any unit at a facility from which hazardous constituents might migrate, irrespective of whether the units were intended for the management of solid and/or hazardous wastes. The Corrective Action Program for the SWMUs on Fort Belvoir's Main Post is being performed in compliance with Fort Belvoir's RCRA Part B, Permit USEPA ID VA7213720082 Module IV, Site Wide Corrective Action. The RCRA Part B permit, issued in 2004, included the investigation and corrective actions for the 204 SWMUs located on Fort Belvoir's Main Post. According to the Fort Belvoir RCRA Permit, "This permit requires the Permittee (Fort Belvoir) to conduct RCRA Facility Investigations (RFIs) for potential releases of hazardous waste or hazardous constituents at the specified SWMUs and areas of concern identified at the Facility." The nearest SMWUs to the Proposed Action site are described below (**Figure 3-7**).

N-17, Fort Belvoir Marina Battery Storage Area

This site was first documented during an SWMU study in 1992, which noted that spent batteries were stored on a wooden pallet within a fenced area near Building 1696, with no visible releases observed. A 1997 study indicated the site was since inactive, with no staining and no spent batteries remaining. A Phase I was conducted in 2008 in which soil samples were collected at the site. Based on the sampling results, Fort Belvoir recommended No Further Action (NFA) at this site and the USEPA concurred in 2012 (Fort Belvoir, 2014).

F-03, Aboveground Waste Petroleum, Oil, and Lubricants Tank

This SWMU was a 250-gallon aboveground petroleum tank in use beginning in 1983 until 1996, when closure through removal of the tank and its contents, the wooden weather shelter, the concrete pad, and two feet of soil was initiated. Although final closure examples indicated elevated concentrations of chromium, a Human Health Risk Assessment (HHRA) determined the site could be closed with unrestricted land use (USACE, 2024).

Figure 3-7: SWMUs Surrounding Dogue Creek

3.5.1.3 Munitions

The Proposed Action site lies within a larger, 42.5-acre area of Fort Belvoir previously documented as a Congressional Demonstration Area. This area spanned both sides of Dogue Creek, south of Mount Vernon Road. A 1943 memorandum mapped the area and described the materials used during demonstration activities as signal rockets, aerial bombs, smoke grenades, and blank ammunition. The documentation suggests no live munitions were used, with bulk explosives used instead to simulate live munitions, and the area appears to have only been used for demonstrations during 1943. A Munitions and Explosives of Concern survey, including soil sampling, was performed on 4 acres within the vegetated, undeveloped portion of the former area, west of Dogue Creek. No munitions or explosives of concern were observed during the survey. With the exception of the western bank of Dogue Creek, the rest of the former demonstration area has been developed. For example, portions of the adjacent residential community were once part of the Congressional Demonstration Area; no munitions were reported during those developments.

For the soil samples, all metals detected were within the range of documented background concentrations, with the exception of one sample that exceeded the range background concentrations for zinc. The exceedance was within an order of magnitude of the threshold and the survey report concluded it was not likely indicative of an impact from historical training activities. No explosives were detected above laboratory reporting limits (USACE, 2024). The Congressional Demonstration Area was recommended for NFA (USACE, 2024). UXO safety literature will be provided to the construction contractors as part of the construction safety.

Fort Belvoir has established two BMPs to address activities on the Installation that could be affected by potential contamination. A variety of pollution sources have impacted or have potentially impacted groundwater quality underlying the Installation. The memorandum, *Prohibition on the Use of Groundwater as a Water Source at USAG-FB* [U.S. Army Garrison Fort Belvoir], dated 15 July 2024, prohibits the use of groundwater underlying Fort Belvoir as a water source except for mission critical needs and environmental monitoring. The memorandum titled, *Directorate of Public Works, USAG-FB Best Management Practice (BMP) Military Munitions and Explosives of Concern (MEC) Requirements for Land Modification and Military Construction (MILCON) on USAG-FB*, signed 12 August 2024, formalizes land use control requirements for assessment and removal of residual munitions debris and munitions and explosives of concern prior to all land modification and Military Construction activities on Fort Belvoir. This BMP applies to all land modification activities on Fort Belvoir property. Proposed land modifications must receive prior approval through the Garrison Master Planning Office and an excavation permit from DPW for all intrusive activity on Fort Belvoir. No land use controls are known to occur within the Proposed Action site.

3.5.1.4 Lead-Based Paints

In 1978, the U.S. Consumer Products Safety Commission banned the use of LBP for residential use. Under the LBP Poisoning Prevention Act (42 USC Section 4822), as amended, LBP hazards equal to or greater than 1 microgram per cubic centimeter must be abated.

Lead-based paints (LBP) and the disposal of LBP, whether from lead abatement or other activities and depending on quantity and concentration, is potentially regulated under the RCRA at 40 CFR Part 460. Due to the age of the facilities at the Dogue Creek Marina, it is to be assumed that there is LBP within the buildings.

3.5.2 Environmental Consequences

3.5.2.1 Thresholds of Significance

Effects on hazardous materials and wastes are assessed by evaluating the degree to which the Proposed Action could cause worker, resident, or visitor exposure to hazardous materials; whether the Proposed Action would lead to noncompliance with applicable federal or state regulations or increase the amounts generated or procured beyond current waste management procedures and capacities; and whether the Proposed Action would disturb a hazardous waste site, create a hazardous waste site, or contribute to a hazardous waste site resulting in adverse effects on human health or the environment.

Effects from UXOs would occur if military munitions are inadvertently encountered, causing an unintended detonation or the release of munition chemicals to the environment

3.5.2.2 Impacts of Proposed Action

3.5.2.2.1 Hazardous Waste

Under the Proposed Action, minor, long-term, adverse impacts would occur to hazardous material and waste. The construction contractor would be required to prepare an ESC/SWPPP plans that will include details on spill prevention and mitigation features during construction to adhere with Fort Belvoir's Spill, Prevention, Control, and Countermeasure Plan. The construction contractor's plans will address practices to minimize the potential for accidental spills of petroleum products or other hazardous substances and the procedures for containing and cleaning up any accidental spills that may occur.

Implementation of the Proposed Action would result in minor, adverse, long-term impacts on hazardous materials and waste concerns within the Proposed Action site. The Proposed Action would increase transient vehicle traffic in the area and this would minimally impact hazardous materials and waste by increasing the frequency of POL (in vehicles) leaving/entering the premise and providing greater potential for visitors who do not know Fort Belvoir's spill prevention measures (or those who know and disregard such measures) to cause inadvertent spills (release from hydraulic lines, motor oil leaks, etc).

Soils excavated or otherwise disturbed during the project's construction phase would be tested in accordance with established Fort Belvoir policies and procedures. If concentrations of contaminants in soils are determined to exceed applicable regulatory thresholds for re-use on the site, any affected soils would be removed from the site and disposed of at a permitted facility off Fort Belvoir in accordance with Virginia Solid Waste Disposal Regulations as well as all other federal, state, and local laws and regulations. There is potential for LBP to make its way into soil during demolition. Testing and remediation would be required for any demolition.

Additionally, all SWMUs within the Proposed Action site have been deemed as needing no further action. Further, Fort Belvoir's BMP (described above) prohibiting the use of all groundwater underlying the Installation adds further protections against inadvertent exposure to potential contaminants in groundwater within and migrating through the Installation. Groundwater cannot be used as a potable source and any residual water contamination would not affect the Proposed Action.

3.5.2.2.2 Munitions

Under the Proposed Action, no significant impacts would occur from munitions. The area was determined to have a low probability of having munitions on site, based on conclusions from previous investigations related to its use as a Congressional Demonstration Area. In addition, standard practice involves training of on-site personnel in the identification of potential munitions

to prevent injury from unintentional detonations due to incorrect handling of discarded ordnance materials.

3.5.2.3 Impacts of No Action Alternative

The No Action Alternative would have no effect on hazardous waste and toxic materials and waste on Fort Belvoir. The land use would not change, and any excavations would be controlled through the Fort Belvoir's dig permit BMP. The Installation's spill management plan would further ensure that continued use of the site as a marina with dry storage slips would not result in any accidental discharges of hazardous waste to the surrounding environment and subsequent harm to those using the area.

3.6 UTILITIES

3.6.1 Affected Environment

The proposed Dogue Creek Travel Camp would include electric, water, sanitary sewer, and communication hook-ups for approximately 50 pull-through RV camp sites. Approximately 15 rustic tent camping spots would be equipped with electric and water. There would also be a newly constructed Welcome Center/camp support building that has an office, laundry section, restrooms, showers, and vending machines. The Proposed Action would have street lighting, sewage lift stations, storm water management and utility upgrades.

3.6.1.1 Electricity

Fort Belvoir purchases its electricity from Dominion Virginia Power (DVP) under a 50-year Utilities Privatization (UP) contract and provides electricity from a DVP-owned substation in the locality. There are no commercial power generating stations on Fort Belvoir that would be capable of powering the entire post. Since the contract was awarded in 2007, DVP has completed several projects to provide additional capacity, reliability, and resilience to the distribution system. These include undergrounding of existing overhead lines and installation of various equipment upgrades (USACE, 2017).

3.6.1.2 Potable Water

Fort Belvoir purchases its potable water from the Fairfax County Water Authority (Fairfax Water), which operates two water treatment facilities in Fairfax County. There are no water treatment facilities, or groundwater wells supplying potable water on Fort Belvoir. The majority of the water distribution system on post is owned and operated by American Water under a 50-year UP contract to provide water and wastewater infrastructure services. Since the award of the contract in 2009, American Water has completed a number of projects, including replacement of 39.3 miles of inadequate and leaking water lines, replacement of three water storage tanks, and stabilization of one stream crossing (Fort Belvoir, 2024a).

3.6.1.3 Sanitary Sewer

Fort Belvoir purchases sanitary sewer treatment services from Fairfax County's Noman M. Cole Jr. Pollution Control Plant. The Plant is adjacent to the southwestern boundary of Fort Belvoir and discharges to Pohick Creek. There are no sanitary sewer treatment facilities in operation on Post. The majority of the sanitary sewer system is owned and operated by American Water under the UP contract to provide water and wastewater infrastructure services. Since the award of the UP contract in 2009, American Water has completed a number of system upgrades, including replacement or relining of 12.7 miles of inadequate/failing sewer pipes, relocation/realignment of utility runs, upgrades of mechanical systems such as lift stations, installation of system monitoring devices, stabilization of three stream crossings, and elimination of cross-connections (Fort Belvoir, 2024a).

3.6.1.4 Telecommunications

Telecommunications and information services on Fort Belvoir consist of a copper and fiber-optic data distribution network. The system includes overhead and buried transmission lines, duct banks, and other supporting facilities. Fort Belvoir owns the entire system, including copper and fiberoptic cable, utility poles, and computerized switchboard systems associated with inter-post and DoD applications. Telecommunication services are provided by several contracted commercial vendors, including Verizon Federal, under privatized agreements. Maintenance, repair and upgrade of this system is done by the commercial vendors (USACE, 2017). There is no telecommunication alteration proposed for this project.

3.6.1.5 Natural Gas

Washington Gas Light Company (Washington Gas) supplies natural gas to Fort Belvoir and the surrounding community. The gas company has a robust distribution system that appears capable of providing adequate natural gas for current and anticipated requirements. Washington Gas has an extensive network of distribution lines covering large parts of Main Post. Washington Gas owns and operates Fort Belvoir's natural gas system. Natural gas is distributed to Main Post, mostly servicing the family housing areas. There are no natural gas lines on the Proposed Action site (Fort Belvoir, 2015a).

3.6.2 Environmental Consequences

3.6.2.1 Thresholds of Significance

Impacts on utilities would be considered significant if an overload of the capacity of existing utilities were to occur to the extent that current levels of service are compromised, resulting in outages or shutdown of services.

3.6.2.2 Impacts of Proposed Action

The Proposed Action utility activities could have long-term, direct, minor, adverse impacts with the addition of newly required utilities for the functionality of the travel camp. The Dogue Creek

Marina Travel Camp will require all common utilities including electric, water, and sewer line hookups. While utility locations are limited, it can be assumed that all RV camper spots will require the aforementioned utility improvements.

3.6.2.2.1 Electricity

There may be short-term, negligible, direct, adverse impacts to electric lines during the construction of the Proposed Action. Construction would require a minor amount of electricity in some instances. However, most construction equipment is battery-operated or powered by fossil fuel combustion. During construction, there could be a temporary disruption in service. However, this impact would be localized to the Proposed Action site and should not impact the other buildings and recreation areas within the vicinity.

There may be long-term, minor, direct adverse impacts to electricity during the operation of the proposed travel camp from the RV electrical hook-ups, street lighting, and camp support facility. The existing electrical lines will be removed and reconfigured and the construction of the Proposed Action would include upgrades to the existing system. There is capacity for this increase in electrical demand at Fort Belvoir and it is not anticipated to decrease service levels to other customers served by DVP (U.S. Army 2015). In addition, lighting for the Proposed Action would be directional and pointed down when appropriate to avoid impacts to any receptors or wildlife nearby. Lighting from travel camp users is potential, as many campers provide their own small, outdoor lighting for their camps or RVs.

3.6.2.2.2 Potable Water

There may be short-term, negligible, direct adverse impacts to waterlines during the construction of the Proposed Action. During construction, these lines would need to be rerouted to meet the configuration of the Proposed Action, which may lead to a temporary disruption in service. However, this impact would be localized to the Proposed Action site and should not impact the other buildings and recreation areas within the vicinity.

There may be long-term, minor, direct, adverse impacts on water usage during the operation of the Proposed Action due to the increase in water demand from the RV, tent hook-ups and camp support facility. However, Fort Belvoir is currently operating within capacity for its potable water demands and it is expected to be able to meet demands for future long-term development (U.S. Army 2015). All proposed drinking water connections will adhere to Safe Drinking Water Act requirements

3.6.2.2.3 Sanitary Sewer

There may be short-term, negligible, direct, adverse impacts to wastewater during the construction period to ensure that the construction workers are provided restroom facilities while on the job site. Portable restroom facilities and disposal services to a permitted wastewater treatment facility would be the responsibility of the contracted construction company. During construction, wastewater lines would need to be rerouted to meet the configuration of the Proposed Action, which may lead to a temporary disruption in service. However, this impact would be localized to

the Proposed Action site and should not impact the other buildings and recreation areas within the vicinity.

There may be long-term, minor, direct, adverse impacts on wastewater during the operation of the Proposed Action. In addition to the RV hook-ups, a new sewage-lift station would be installed and connected to the existing wastewater lines in the Proposed Action site. The anticipated amount of wastewater increases is within the acceptable quantity for future long-term development at Fort Belvoir (Fort Belvoir, 2015a).

3.6.2.2.4 Telecommunications

There may be minor, direct, long-term impact to telecommunications from the Proposed Action during construction. Telecommunications lines near the site may be temporarily disrupted during construction but restored after it ends.

3.6.2.2.5 Natural Gas

Minor, direct, long-term effects could occur to natural gas under the Proposed Action. The Proposed Action would include the addition of natural gas lines to the area, increasing usage and strain on the current systems. However, Fort Belvoir's natural gas system is capable of handling an increased capacity (Fort Belvoir, 2015a).

3.6.2.3 Impact of No Action Alternative

Under the No Action Alternative, no impacts would be expected on any utilities. All operations on Fort Belvoir would remain the same, with no fluctuations in utility demands.

3.7 NOISE

3.7.1 Affected Environment

Noise is generally defined as unwanted sound. It can be any sound that is undesirable because it interferes with communications or other human activities, affects hearing, or is otherwise annoying. Noise may be intermittent or continuous, steady, or impulsive. Human response to noise varies, depending on the type of noise, distance from the noise source, sensitivity, and time of day.

The decibel (dB) is a unit of measurement for noise levels and uses a logarithmic scale. To better match the sensitivity of the human ear, noise levels are typically A-weighted (dBA) to deemphasize low-frequency and very high-frequency sound. Sound levels, in dBA, for common activities and construction work are presented in **Table 3-4** below. Noise levels and durations from these activities would vary depending on the specific equipment used, and the impact on a receptor would depend on the distance between the receptor and the noise. Generally, noise levels decrease by approximately six dBA for every doubling of distance for point sources (such as a single piece of construction equipment) and approximately three dBA for every doubling of distance for line sources (such as a stream of motor vehicles on a busy road at a distance) (Fort Belvoir, 2024b).

Table 3-4: Common Sound Levels and Exposure Conditions

Source	Decibel Level (in dBA)	Exposure Concern
Silent Study Room	20	Normal safe level.
Library	35	
Soft Whisper (5 ft. away)	40	
Average Home in an urban area	50	
Dishwasher in next room	55	
Conversational speech (3 ft. away)	65	
Classroom Chatter	70	
Freight Train (100 ft. away)	80	May affect hearing in some individuals depending on sensitivity, exposure length, etc.
Heavy Traffic	90	
Construction Site	100	
Operating Heavy Equipment	120	
Live Rock Band	130	
Fighter Jet Launch	150	Above 140 dB may cause pain.
Shotgun Blast	160	
Rocket Launch	180	

Source: Federal Aviation Administration [FAA], 2022; OSHA, 2022; Pulsar Instruments, 2024

The National Institute for Occupational Safety and Health (NIOSH) recommends that individuals working in an environment of 85 dBA or louder for an eight-hour workday limit their exposure to this noise level and wear protective earwear to help manage and prevent hearing loss due to noise exposure. The Occupational Safety and Health Administration's (OSHA's) Noise standard (29 CFR 1910.95) requires employers to have a hearing conservation program in place if workers are exposed to a time-weighted average noise level of 85 dBA or higher over an eight-hour work shift. Neither NIOSH nor OSHA establish non-occupational noise safety levels.

The equivalent-average sound level represents an average sound level in decibels of a given event or period of time (typically one hour). The day-night average sound level (DNL) is also a useful descriptor for noise because it approximates the response characteristics of human hearing. It is the average noise level over a 24-hour period with nighttime hours adjusted with a 10-dB increase, thus, the higher the DNL, the louder the sound.

The Noise Control Act of 1972 (PL 92-574) directs federal agencies to comply with applicable federal, state, interstate, and local noise control regulations. The applicable local noise control regulation is the Fairfax County Noise Ordinance (29-15-108.1), which states "no person shall permit, operate, or cause any source of sound or sound generation to create a sound which exceeds the limits set forth in the following table titled 'Maximum Sound Levels' when measured at the property boundary of the sound source or at any point within any other property affected by the sound". As shown in **Table 3-5**, the maximum sound levels from continuous sounds sources (such as a jackhammer) in residential areas should not exceed 60 dBA during the day and 55 dBA at night. An impulse sound is generally characterized by a sound event that lasts for no more than one second, such as sounds from weapons, pile drivers, or blasting.

Table 3-5: Fairfax County Noise Ordinance (§29-15-108.1)

Use and Zoning District Classification	Time of Day	MAXIMUM SOUND LEVELS	
		Continuous Sound (dBA)	Impulse Sound (dB)
Residential Areas in Residential Districts	7 a.m. to 10 p.m.	60	100
Residential Areas in Residential Districts	10 p.m. to 7 a.m.	55	80

Source: Fairfax County, 2021

The Proposed Action site is within a residential area and is isolated from industrial facilities. The nearest potential noise-sensitive receptor to the Proposed Action site is a childcare facility, a residential neighborhood, and a hospital. The closest daycare facility is B-950 Markham School Age Center, which provides Preschool and before and after school care for school age children. B-950 Markham School Age Center is approximately 0.35 miles southwest from the southernmost peninsula of the Proposed Action site. The Alexander T. Augusta Military Medical Center is approximately 0.70 miles west of the LOD. Lastly, the Proposed Action site is adjacent to the River Village neighborhood on the east and northeast side.

Existing sources of noise surrounding the Proposed Action site are from vehicular traffic on the Fort Belvoir roadways. The closest major thoroughfare is U.S. 1, located approximately 0.47 miles northwest of the Proposed Action site. In addition, Fort Belvoir's airfield is located approximately 2.8 miles to the west of the Proposed Action site and is a noise source from airplane and helicopter takeoffs and landings.

The Proposed Action site is not located within the 65 dBA DNL areas for any nearby airports and airfields; therefore, aircraft-related noise is anticipated to be less than 65 dBA DNL. Noise elements in and around the Proposed Action site are consistent with that of any residential military post and its surrounding area that include administrative and recreational activities. The use of heavy equipment typically occurs sporadically throughout the daytime hours. Seasonal noise additions include the normal operation of Heating Ventilation and Air Conditioning systems, lawn maintenance, and increased pedestrian activities. None of these operations or activities produce excessive levels of noise.

3.7.2 Environmental Consequences

3.7.2.1 Threshold of Significance

Noise impacts would be considered significant if the Proposed Action created appreciable long-term noise increases in areas of incompatible land use. Additionally, continuous construction noises above 60 dBA may be considered a nuisance if audible at residential properties during daytime hours (07:00 to 22:00) per the Fairfax County noise ordinance. Furthermore, noise levels exceeding NIOSH or OSHA guidance can be harmful to workers.

3.7.2.2 Impacts of Proposed Action

Construction

The Proposed Action construction activities could have short-term, direct, minor, adverse impacts on noise in the immediate area of the site, primarily due to site preparation, demolition, and construction activities. Once brought to the site, construction equipment would remain within the Proposed Action site until the phase for which the equipment was needed is complete.

The noise levels generated at any given time would vary depending on the phase of construction, the specific activities occurring, the types of equipment used, and the quantities used. Construction activity would generally only occur between the hours of 07:00 and 15:30, Monday through Friday, which would comply with the construction schedule requirements of the Fairfax County noise ordinance.

Table 3-6 summarizes calculated construction noise levels for representative activities that generate higher noise levels. The calculations assume those representative equipment types would all operate at the same location for each activity.

Table 3-6: Estimated Noise Levels from Construction Activities

Distance from Noise Source in feet (meters)	Estimated Noise Level in dBA
50 (15.2)	90–94
100 (30.5)	84–88
150 (45.7)	81–85
200 (61.0)	78–82
400 (121.9)	72–76
800 (243.8)	66–70
1,200 (365.8)	< 64

Source: Federal Highway Administration [FHWA], 2006

At approximately 80 feet from the closest row of residential homes to the Proposed Action site, the estimated noise level from construction activities would be less than 90 dBA. At more than 2,700 feet from the Proposed Action site, the child development center would be at or below the Fairfax County Noise ordinance of 60 dBA.

To minimize the potential adverse impact from these noises, vehicles would be equipped with noise-dampening equipment including mufflers which would be operated according to the manufacturers' instructions and limiting engine idling to less than five minutes. Additionally, construction would take place during daylight hours on weekdays, unless there is a specific action that would require working outside of this normal timeframe, such as mobilizing oversized materials or equipment to the site. OSHA regulations require that employers make hearing protectors available to those employees who are exposed to work conditions at or above 85 dBA. Thus, potential impacts from construction equipment noise on workers would be minimized by following OSHA regulations and the USACE *Safety and Health Requirements Manual EM 385-1-1*.

Operations

The Proposed Action could result in long term, direct, minor, adverse impacts due to the operation of the Proposed Action. The noise levels generated by operational activities would be consistent

with the existing travel camps at Fort Belvoir and the current marina. The primary source of increased noise levels would be due to vehicular traffic and operation of the RVs. The greatest sources of noise from the operation of RVs are generators and air conditioners. However, the Proposed Action includes electrical hook-ups, so generators would not be used at the site. Standard RV air conditioners sound levels are typically between 65-75 dBA.

3.7.2.3 Impacts of No Action Alternative

Under the No Action alternative, no new noise generating activities would occur and the current noise conditions at the Proposed Action site would remain unchanged. Therefore, there would be no impacts associated with noise.

3.8 AIR QUALITY

3.8.1 Affected Environment

Air quality is defined by the ambient air concentration of specific pollutants of concern at a given location. Air pollution occurs when harmful substances, including solid particles and gases, are introduced into the earth's atmosphere. It can cause harm to the natural environment, including humans, animals, and plants. The following sections describe existing air quality conditions in the vicinity of the Proposed Action site on Fort Belvoir, applicable laws and regulations, and potential impacts on air quality that could result from the implementation of the Proposed Action.

3.8.1.1 National Ambient Air Quality Standards (NAAQS)

The USEPA, under the requirements of the 1970 CAA as amended in 1977 and 1990, established NAAQS for the following six criteria pollutants (40 CFR 50):

- Carbon monoxide (CO)
- Lead
- Nitrogen dioxide
- Ozone (O_3)
- Sulfur dioxide (SO_2)

- Particulate matter (PM), divided into two size classes:
    - Measured less than or equal to 10 micrometers in diameter (PM_{10})
    - Measured less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$)

Carbon monoxide, sulfur oxides (SO_X), and some particulates are emitted directly into the atmosphere from emissions sources. Nitrogen dioxide, O_3, and some particulates are formed through atmospheric and chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric processes. Volatile organic compounds (VOCs) and nitrogen oxides (NO_X) emissions are precursors of O_3 and are used to represent O_3 generation. Lead emissions from common air emissions sources that would be used under the Proposed Action have been negligible since leaded gasoline for on-road vehicles was phased out in the United States between 1973 and 1996. Therefore, lead is not included in the air quality analysis.

The NAAQS include primary and secondary standards. The primary standards were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air. Each state has the authority to adopt air quality standards stricter than those established under the federal NAAQS. Virginia accepts the federal standards (9 VAC Chapter 30). **Table 3-7** shows the federal primary and secondary air quality standards accepted by Virginia.

Table 3-7: National Ambient Air Quality Standards

Criteria Pollutant	Primary/ Secondary	Averaging Time	Level	Form
CO	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
NO_X	Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
	Primary and secondary	Annual	53 ppb	Annual Mean
O_3	Primary and secondary	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
$PM_{2.5}$	Primary	Annual	12 µg/m^3	Annual mean, averaged over 3 years
	Secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years
	Primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
PM_{10}	Primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Lead	Primary and secondary	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded
SO_X	Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Sources: 40 CFR 50, 9 VAC Chapter 30
Notes: ppm = parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter

Areas that are and have historically been in compliance with the NAAQS or have not been evaluated for NAAQS compliance are designated as attainment areas. Areas that violate a federal air quality standard are designated as nonattainment areas. Areas that have transitioned from nonattainment to attainment are designated as maintenance areas and are required to adhere to maintenance plans to ensure continued attainment.

Fort Belvoir is in Fairfax County, which is within the National Capital Interstate Air Quality Control Region (40 CFR 81.12). The USEPA has designated Fairfax County as marginal

nonattainment for the 2015 eight-hour O_3 NAAQS and as in maintenance for the 2008 eight-hour O_3 NAAQS. Fairfax County is designated as attainment or unclassified for all other criteria pollutants (USEPA, 2024).

3.8.1.2 Clean Air Act Conformity

The CAA, as amended in 1990, requires state agencies to develop and adopt a State Implementation Plan to target the elimination or reduction of the severity and number of NAAQS violations in nonattainment areas. Federal agencies are required to ensure that their actions conform to the State Implementation Plan in a nonattainment area. Under Section 176(c) of the CAA, a project is in "conformity" if it corresponds to a State Implementation Plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving their expeditious attainment.

Conformity further requires that such activities would not:

- cause or contribute to any new violations of any standards in any area
- increase the frequency or severity of any existing violation of any standards in any area; or
- delay timely attainment of any standard or any required interim emission reductions or other milestones in any area

The USEPA published final rules on general conformity (40 CFR 51 and 93) in the Federal Register on November 30, 1993. The General Conformity Rules applies to federal actions in nonattainment or maintenance areas for any of the criteria pollutants. There are two main components to the overall process: a conformity applicability analysis to determine whether a conformity determination is required and, if it is, a conformity determination to demonstrate that the action conforms to the State Implementation Plan. A conformity applicability analysis is typically done by quantifying applicable direct and indirect emissions that are projected to result from implementation of a federal action. When the total emissions of nonattainment and maintenance pollutants (or their precursors) exceed specified thresholds, a general conformity determination is required. The emissions thresholds that trigger requirements for a general conformity determination are called *de minimis* levels. A federal action is exempt from a general conformity determination if the action's emissions for a particular criteria pollutant are below the pollutant's *de minimis* threshold.

Fairfax County is designated as nonattainment for the 2015 eight-hour O_3 NAAQS and as maintenance for the 2008 eight-hour O_3 NAAQS. Therefore, the General Conformity Rule is potentially applicable to emissions of VOCs and NO_X because they are precursors for O_3. As outlined in 40 CFR 93.153(b), the applicable *de minimis* level thresholds for these pollutants is 50 tons per year (tpy) for VOCs and 100 tpy for NO_X.

3.8.1.3 Hazardous Air Pollutants

In addition to criteria pollutant standards, USEPA also regulates hazardous air pollutant (HAP) emissions for each state. HAPs differ from criteria pollutants as they are known or suspected to cause cancer and other diseases or have adverse environmental impacts. The National Emission Standards for Hazardous Air Pollutants regulate 188 HAPs based on available control technologies. Sources of HAP emission on Fort Belvoir include stationary, mobile, and fugitive emissions sources. Stationary sources include boilers, incinerators, fuel storage tanks, fuel-dispensing facilities, vehicle maintenance shops, laboratories, degreasing units, and similar testing units. Mobile sources of emissions include private and government-owned vehicles.

3.8.1.4 Emissions Reporting

Title V of the CAA requires states and local agencies to permit major stationary sources. As a major stationary source for emissions, Fort Belvoir (Main Post) operates under a Title V Permit (Registration Number 70550, issued on March 21, 2003). Fort Belvoir also operates under a minor New Source Review (mNSR) permit for Main Post (same Registration Number 70550).

Stationary emission sources on Fort Belvoir include large boilers, generators, heaters, above ground storage tanks and emergency generators. Emissions limits for stationary sources, as directed by the mNSR permit, are included in **Table 3-8**.

As a requirement of the permit, Fort Belvoir Air Quality Program maintains a rolling 12-month total for the criteria pollutant emissions from Fort Belvoir sources, as found in **Table 3-8**. Any new equipment with the potential to produce emissions would be evaluated for permitting thresholds prior to purchase and installation. Should the final design require it, a new permit would be obtained to account for future stationary sources, as warranted.

Table 3-8: 2023 Fort Belvoir Emissions from Stationary Sources (TPY) for CY 2024

Year	SO2	CO	PM_{10}	$PM_{2.5}$	NOx	VOCs
2024 Emissions	0.11	12.34	1.15	1.02	12.69	1.30

3.8.1.5 Sensitive Receptors

Children, elderly people, and people with illnesses are especially sensitive to the effects of air pollutants; therefore, hospitals, schools, convalescent facilities, religious facilities, and residential areas are considered to be sensitive receptors for air quality impacts, particularly when located within one mile from the emissions source. There are several Fort Belvoir-based medical facilities, schools, residential areas, and religious institutions on the Installation, most of which are located over a one-mile radius of the Proposed Action study area.

The closest daycare facility, JoAnn Blanks Child Development Center, is approximately a half a mile to the northwest of the Proposed Action site. The Alexander T. Augusta Military Medical Centeris approximately 0.70 miles west of the LOD. Lastly, the Proposed Action is adjacent to the River Village neighborhood on the east and northeast side. The Dogue Creek marina is an urban area with many sensitive receptors.

3.8.2 Environmental Consequences

3.8.2.1 Threshold of Significance

The threshold of significance for air quality impacts would be exceeded if the Proposed Action were to result in any of the following:

- Exceedance of the applicable General Conformity Rule *de minimis* level thresholds; or
- Increase of criteria pollutant emissions to levels above permitted source thresholds

Based on compliance with the NAAQS, the General Conformity Rule is potentially applicable to emissions of VOCs and NO_X in Fairfax County. The applicable *de minimis* thresholds for these pollutants are 50 tpy for VOCs and 100 tpy for NO_X (40 CFR 93.153[b]). While the General Conformity Rule is not applicable to emissions of CO, SO_X, $PM_{2.5}$, and PM_{10}, an insignificance indicator of 250 tpy, defined as the USEPA Prevention of Significant Deterioration threshold, can be used to provide an indication of the significance of potential impacts to air quality. The 250 tpy threshold indicator does not denote a significant impact; however, it does provide a threshold to identify actions that have insignificant impacts to air quality.

3.8.2.2 Impacts of Proposed Action

Construction

Short-term, minor, adverse impacts on air quality could result from the construction of the Proposed Action. Emissions of criteria pollutants would be directly produced from activities such as operation of heavy equipment; heavy duty diesel vehicles hauling construction materials and debris to and from the project site; workers commuting daily to and from the project site in their personal vehicles; and ground disturbance. All such emissions would be transitory in nature and would only occur when such activities are occurring. The estimated annual emissions for construction under the Proposed Action are summarized in **Table 3-9**.

Table 3-9: Estimated Air Emissions from the Construction of the Proposed Action (Tons)

Year	CO	VOC	SO_x	NO_x	PM_{10}	$PM_{2.5}$
2026	0.023	0.002	0.000034	0.015	0.0006	0.0006

The air pollutant of greatest concern is PM, such as fugitive dust, which is generated from ground-disturbing activities and combustion of fuels in construction equipment. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of activity. Fugitive dust emissions would be greatest during initial site preparation activities and site grading and would vary from day to day depending on the work phase, level of activity, and prevailing weather conditions. In accordance with 9 VAC 5-40-90, construction contractors would be required to take reasonable precautions to prevent particulate matter from becoming airborne. BMPs and environmental control measures (e.g., wetting the ground surface) would be incorporated at construction areas to minimize fugitive dust emissions. In addition, work vehicles would be well-maintained and use diesel particulate filters to reduce emissions of criteria pollutants. These BMPs and environmental control measures could reduce uncontrolled PM emissions from a construction site by approximately 50 percent.

In 2022, Virginia produced 96.2 million metric tons of CO_2 emissions (USEIA, 2025). The Proposed Action would represent less than one hundredth of the total CO_2 emissions from the state. As such, air emissions produced during construction would not notably increase the total CO_2 emissions produced by the State.

Operations

Long-term, negligible, direct, adverse impacts on air quality could occur from operational air emissions associated with the Proposed Action. Operational air emissions would mainly be produced from the natural gas heating for the proposed buildings and the gas usage from the personnel supporting the buildings. Total estimated annual air emissions from the proposed travel camp are summarized in **Table 3-10,** when the travel camp would be in a steady state.

Table 3-10: Emissions of the Proposed Action Tons Per Year in 2028 (Steady State)

Pollutant	Emissions TPY
SO_x	0.002
VOC	0.170
NO_x	0.098
CO	2.508
PM_{10}	0.004
$PM_{2.5}$	0.004
Ammonia	0.020
Pb (lead)	0

Air emissions produced during operation of the Proposed Action would not meaningfully contribute to the potential effects of climate change and would not noticeably increase the total CO_2 emissions produced by the state.

3.8.2.2.1 General Conformity

Emissions of VOCs and NO_X during the construction phase would be less than their respective *de minimis* level thresholds of 50 tpy for VOCs and 100 tpy for NO_X. Emissions of CO, SO_X, $PM_{2.5}$, and PM_{10} would be less than the insignificance threshold of 250 tpy. In addition, the annual emissions from operation of the Proposed Action would not exceed the *de minimis* level thresholds or insignificance thresholds of any criteria pollutant; therefore, a general conformity determination is not required, and no significant impacts would occur. The U.S. Army has prepared a Record of Non-Applicability (RONA) for CAA conformity (see **Appendix F**).

3.8.2.3 Impacts of No Action Alternative

There would be no impacts from the No Action Alternative. The Proposed Action would not be constructed; therefore, air quality would not change in any way.

3.9 TRAFFIC AND TRANSPORTATION

3.9.1 Affected Environment

3.9.1.1 Transportation

Direct access to Fort Belvoir from I-95 is primarily via the Fairfax County Parkway (Route 7100 via Exit 166) with alternate access points at Lorton Road (Exit 163) and U.S. 1 (Exit 161). Rail transit does not directly connect to Fort Belvoir, but buses serve the post both directly and indirectly (Fort Belvoir, 2015c).

Fort Belvoir's transportation system consists of roadways, multi-use trails, and a military airfield (Davison Army Airfield). Road access to Fort Belvoir is primarily through seven named Access Control Points (ACPs): Tulley Gate (entry to Pohick Road from U.S. 1), Lieber Gate (entry to Meade Road from U.S. 1), Pence Gate (entry to Belvoir Road from U.S. 1), J. J. Kingman Gate (entry from the Fairfax County Parkway), Walker Gate (entry from the Mount Vernon Memorial Highway), Telegraph Gate (entry on Beulah Street), and Farrar Gate (access to DAAF only). It is anticipated that the primary point of entry for RVs using the proposed MWR facility is the Tulley Gate, with Lieber Gate as the secondary point of entry. Pence Gate is closer to the Proposed Action site than these two gates but is closed indefinitely; therefore, this route of ingress/egress is not considered in this analysis. Patrons with large, Class A RVs would need to use the Walker Gate, as the Dogue Creek Bridge is rated for a maximum of 5 tons of weight; however, this access is limited to weekdays between 6am and 10am to facilitate morning commutes onto Fort Belvoir.

The Proposed Action site is located on the South Post and accessed via Mount Vernon Road. Mount Vernon Road serves as a north-south artery for residences, schools, and administrative facilities and is a two-lane road with an adjacent multi-purpose hiker/biker trail (Fort Belvoir, 2015c). The closest major roadway that connects to the site is U.S. 1, located approximately 0.44 miles to the north of the intersection of Mount Vernon Memorial Highway and Mount Vernon Road. U.S. 1 bisects the Main Post in an east-west direction, until it meets I-95 approximately 7 miles further west from the Mount Vernon Memorial Highway intersection. I-95 is a heavily traveled regional artery and serves as a major thoroughfare for travel up and down the entire eastern seaboard.

To access the entrance to the marina, vehicles turn off Mount Vernon Road to Hudson Road, which is also the only entrance point for the River Village Neighborhood, comprised of approximately seventy duplexes.

3.9.1.2 Traffic

Fort Belvoir is located 18 miles southwest of Washington, D.C., in Fairfax County, which is the most populated jurisdiction in the NCR and is expected to continue to grow according to Fairfax County and Metropolitan Washington Council of Governments forecasts (Fort Belvoir, 2015c). Fort Belvoir is one of the largest employers in Fairfax County with a workforce of over 39,000 employees and is a major driver of traffic within the area. On post, workers are most heavily concentrated on the North and South Post. In addition to commuters, Fort Belvoir's services for

active and retired military personnel and their dependents attract non-commuting trips during the day, including visitors to the Post Exchange, Commissary, the Alexander T. Augusta Military Medical Center, and recreational facilities. There are approximately 9,300 people living on Fort Belvoir.

The existing roadway network provides mobility and connectivity to support the current use of the Installation. Regional peak hour traffic where Installation roads connect with public roadways creates inbound and outbound congestion during peak periods. Most of the traffic on the public roadway system in the vicinity of Fort Belvoir in non-Installation traffic (Fort Belvoir, 2015c). However, once inside the security gates, there is no major congestion within Fort Belvoir.

A Transportation Impact Analysis conducted for the 2015 Fort Belvoir Transportation Management Plan analyzed the level of service (LOS) for major intersections at Fort Belvoir (Fort Belvoir 2015). LOS is a qualitative measure describing operational traffic conditions, and the perception of these conditions by drivers or passengers. These conditions include factors such as speed, delay, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. Levels of service are given letter designations from A to F, with LOS A representing the best operating conditions (free flow, little delay) and LOS F, the worst (congestion, long delays). Generally, LOS A and B are considered high LOS; LOS C and D are considered moderate LOS, and LOS E and F are considered low LOS. In general, the standards are LOS D in urban areas and LOS C in rural areas.

Table 3-11 shows the LOS for the primary intersections serving the Proposed Action site. The intersections in the vicinity of the Proposed Action site, with the exception of Mount Vernon Memorial Highway and U.S. Route 1, are operating at a LOS D or higher which is the standard for the urban area surrounding Fort Belvoir.

Table 3-11: LOS For Major Intersections in Vicinity of Proposed Action Site

Intersection	Signalized (Y/N)	am	pm	am	pm
		Delay (seconds/vehicle)		LOS	
Gunston Road and 12th Street/Pohick Road	Y	20.5	31.4	C	C
Gunston Road and 16th Street	Y	8.3	8.8	A	A
Gunston Road and 21st Street	N	10.9	12.5	B	B
Gunston Road and 23rd Street	N	13.4	11.1	B	B
Theote Road and Pohick Road	Y	4.1	10.6	A	B
Theote Road and 16th Street	N	3.4	3.3	A	A
Pohick Road and Route 1	Y	25.7	49	C	D

The Transportation Impact Analysis does note that traffic leaving the Installation through the Mount Vernon Road and Mount Vernon Memorial Highway intersection, an unsignalized "T" intersection with a stop sign controlling the Mount Vernon Road approach, experiences an LOS F for eastbound left-turning vehicles leaving post in the afternoon peak hours (Fort Belvoir, 2015c).

3.9.2 Environmental Consequences

3.9.2.1 Thresholds of Significance

Traffic and transportation would be significantly impacted if there is a decrease in the LOS, an increase in the volume of traffic beyond the existing roadway capacity, parking availability falls below minimum local standards, or new or substantially improved roadways or traffic control systems are needed.

3.9.2.2 Impacts of Proposed Action

Construction

The Proposed Action could have a short-term, negligible, direct, adverse impact on traffic and roadways in the form of construction traffic within the boundaries of the Fort Belvoir South Post, including Tulley Gate, the anticipated primary route of ingress and egress to and from the Installation, along with the portion of Mount Vernon Memorial Highway (off post) connecting Walker Gate to U.S. 1. Construction of the Proposed Action would not impact any transportation infrastructure outside of Fort Belvoir and therefore have no impact on LOS.

The roadway network within Fort Belvoir provides sufficient access for any heavy equipment that may be required for the construction phase of the Proposed Action; therefore, none of the equipment used to construct the facility would require modifications to transportation infrastructure or traffic patterns.

To ensure that construction vehicles do not degrade the quality of the roadways within Fort Belvoir, gravel construction pads would be installed at the construction site exit to ensure dirt would be physically removed (including using brushes and/or water) from construction equipment before the equipment travels on the Installation's roadways. Other mitigation measures to minimize traffic impacts during construction could include limiting which ACPs would be permitted to be used by construction vehicles and scheduling deliveries to avoid major intersections during peak times.

Operations

The Proposed Action could have long-term, minor, direct, adverse impacts on traffic and roadways from the operation of the Proposed Action within the boundaries of Fort Belvoir. There would be a slight increase in use of the roadways due to the increase in RVs and passenger vehicles when accessing the site. Some of this traffic would replace the volume of traffic associated with use of the dry slips, with patrons accessing the marina to put boats in/out of the water and/or trailer them to other destinations. All but one of the intersections within the vicinity of the Proposed Action site are operating at a LOS of D or better, indicating that there is capacity for some increase in traffic. In addition, users of the Proposed Action would likely be accessing the Installation during non-peak commuting hours, as this is a recreational use with most of the traffic volume anticipated to be on weekends or non-commuting hours. Further, patrons could be encouraged to access the site using other nearby ACPs, limiting traffic impacts to areas of Fort Belvoir with less congestion.

All parking for the RVs and passenger vehicles would be located within the Proposed Action site. Therefore, there would be no impacts to existing parking availability within the vicinity of the site.

3.9.2.3 Impacts of No Action Alternative

Under the No Action alternative, there would be no changes made to current or future transportation or traffic conditions at or in the vicinity of the Proposed Action site. Therefore, there would be no impacts to transportation and traffic to Fort Belvoir and the surrounding areas.

3.10 CULTURAL AND HISTORIC RESOURCES

3.10.1 Affected Environment

Several federal laws and regulations—including the National Historic Preservation Act (NHPA) of 1966, as amended, the Archaeological and Historic Preservation Act of 1974, the American Indian Religious Freedom Act (AIRFA) of 1978, the Archaeological Resource Protection Act of 1979 (ARPA), and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1990—have been established to manage cultural resources. Cultural resources include "historic properties" as defined by the NHPA, "cultural items" as defined by NAGPRA, "archaeological resources" as defined by ARPA, "sacred sites" as defined by EO 13007, Indian Sacred Sites, to which access is afforded under AIRFA, and collections and associated records as defined in 36 Code of Federal Regulations (CFR) 79 (Fort Belvoir, 2024b).

Archaeological resources consist of locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic significance. Traditional cultural properties include locations of historic occupations and events, historic and contemporary sacred and ceremonial areas, prominent topographical areas that have cultural significance, traditional hunting and gathering areas, and other resources that Native Americans or other groups consider essential for the persistence of their traditional culture (Fort Belvoir, 2024b).

The NHPA outlines federal policy to protect historic properties and promote historic preservation in cooperation with other nations, tribal governments, states, and local governments. Sections 106 and 110 of the NHPA require federal agencies to identify, evaluate, inventory, and protect historic properties (i.e., those listed or eligible for listing in the NRHP that are under their jurisdiction and control. Federal agencies must delineate the Area of Potential Effect (APE) within which impacts from a proposed action may occur, identify historic properties present within the APE, assess the potential effects of the undertaking on those historic properties and consider ways to avoid, minimize, or mitigate any adverse effects. The APE is the geographic area in which an undertaking may directly or indirectly cause changes in the use or character of a historic property. An undertaking is any federal action with the potential to affect historic properties. Federal agencies are further required to initiate consultation with the State Historic Preservation Office (SHPO) for actions that may impact historic properties. Virginia Department of Historic Resources (VDHR) serves as the SHPO in Virginia (Fort Belvoir, 2024b).

The APE for the Proposed Action is defined as the Proposed Action site plus an half-mile buffer surrounding the Proposed Action site to account for any potential effects on the viewshed of other resources in the vicinity (Fort Belvoir, 2024b). This is an indirect APE, as ground disturbance will only take place within the LOD.

3.10.1.1 Fort Belvoir History

The area that comprises Fort Belvoir has been used by military and government agencies since the early 20th Century. Originally, this area was named Camp AA Humphreys and was used as an engineering school/proving ground, ordnance range, and training camp for soldiers entering WWI. The population of Camp AA Humphreys reached over 22,000 troops during its most active period. After the end of WWI, the population of the Installation decreased substantially in size and it became a permanent Army Installation in 1922, being renamed as Fort Humphreys. The Installation's main mission remained as a training/proving ground for military engineers. The Army Garrison was renamed in 1935 to Fort Belvoir in recognition of Belvoir Manor which had once occupied a land parcel of the area that the Installation was now situated upon (Fort Belvoir, 2024b).

After WWII the post fluctuated in personnel size due to times of conflict and peacetime. The mission of Fort Belvoir continued to be the research and development of engineering techniques and practices. Areas of emphasis ranged from cold weather temporary building designs to fungicides used in tropical climates. Fort Belvoir was considered the main engineering facility for the Army until 1988 when the U.S. Army Engineer School was transferred to Fort Leonard Wood, Missouri. The current mission of Fort Belvoir is to provide administrative and basic operational support to its various tenant organizations (Fort Belvoir, 2024b).

Fort Belvoir has used the Proposed Action site as a 111-slip marina since the 1960s as parking and storage space for boats and RVs. The marina has four wooden floating piers with catwalks and individual boat slips. There are concrete launch ramps and a one boat lift. It is for the recreational use of active duty and retired military members, their families, and the DoD workforce (Commonwealth Heritage Group, INC., 2021).

3.10.1.2 Cultural Resources in the Area of Potential Effect

The Proposed Action site has no archeological sites within the LOD and four previously recorded architectural sites within the 0.5-mile indirect APE (**Figure 3-8**).

Facility 1698 is multiple structures located outside of the LOD on the southwestern side of the Proposed Action site and was built in 1965, making it over 50 years old. Although outside of the LOD, Facility 1698 connects to the LOD. This facility is a docking area that provides dry storage space for boats and RVs. Facility 1698 was evaluated for eligibility to the NRHP and was recommended not eligible for listing due to a lack of architectural significance. This facility is not known to be associated with significant events or persons and does not have the ability to yield information important to prehistory or history (Commonwealth Heritage Group, INC. 2021).

The marina's northern access gate, built in 1960, for which VDHR provided concurrence with the Army's determination of non-eligibility for listing on the NRHP on January 30, 2018. Building 1695, constructed in 1960, is a lift station within the APE. It has been evaluated and VDHR provided concurrence with the Army's determination of non-eligibility for listing on the NRHP on January 30, 2018. Building 1696, also constructed in 1960, is a boathouse proposed to be demolished as part of this undertaking. This structure was also evaluated for eligibility pursuant to Section 110 of the NHPA and received VDHR's concurrence on the Army's determination of non-eligibility on the same date as the lift station.

The River Village neighborhood is adjacently located to the north and northeast of LOD and within the APE. The neighborhood houses were built in the late 1950s, making them over 50 years old. Under an Army-wide Section 106 action in 2005, "*Program Comment for Capehart and Wherry Era Army Family Housing and Associated Structures and Landscape Features (1949-1962)"* (Program Comment, 2005), the River Village neighborhood properties are considered eligible for the NRHP but are not eligible as part of Fort Belvoir's historic district (Commonwealth Heritage Group, INC. 2021) (Program Comment, 2005).

The Dogue Creek Bridge is located north of the LOD, within the APE, connecting the east side of Dogue Creek to the west side via Mount Vernon Road, which is approximately 900 feet north of Facility 1698. This bridge was built in 1958, making it over 50 years old, and was determined eligible for listing on the NRHP under Criteria A and C. The bridge represented the techniques, technology, and materials used during the construction period by USACE during the 1940s and 1950s. The Dogue Creek Bridge was considered significant because it was an example of the engineer training at Fort Belvoir during the mid-twentieth century and is also one of the few surviving mid-twentieth century metal truss bridges in Virginia (Commonwealth Heritage Group, INC., 2021). In 2019, major repairs and replacement of metal truss pieces resulted in an adverse effect to this historic property, significantly impacting its integrity. A Memorandum of Agreement was signed between Fort Belvoir and the VDHR that outlined appropriate mitigation for this adverse effect (Fort Belvoir, 2019).

3.10.2 Environmental Consequences

3.10.2.1 Thresholds of Significance

Significant impacts on cultural resources would occur if potential resources that have not been previously documented or were not properly identified, consultation pursuant to Section 106 is not completed, or impacts on viewsheds within the APE buffer are not appropriately considered and addressed.

Viewshed impacts would be beneficial to the general setting of the area due to the project scope proposing demolition of a 7,500 SF building and replacing it with a parking lot and a smaller 3,000 SF Welcome Center/camp support building. The smaller replacement building would allow a more open viewshed for the visitors at the proposed travel camp.

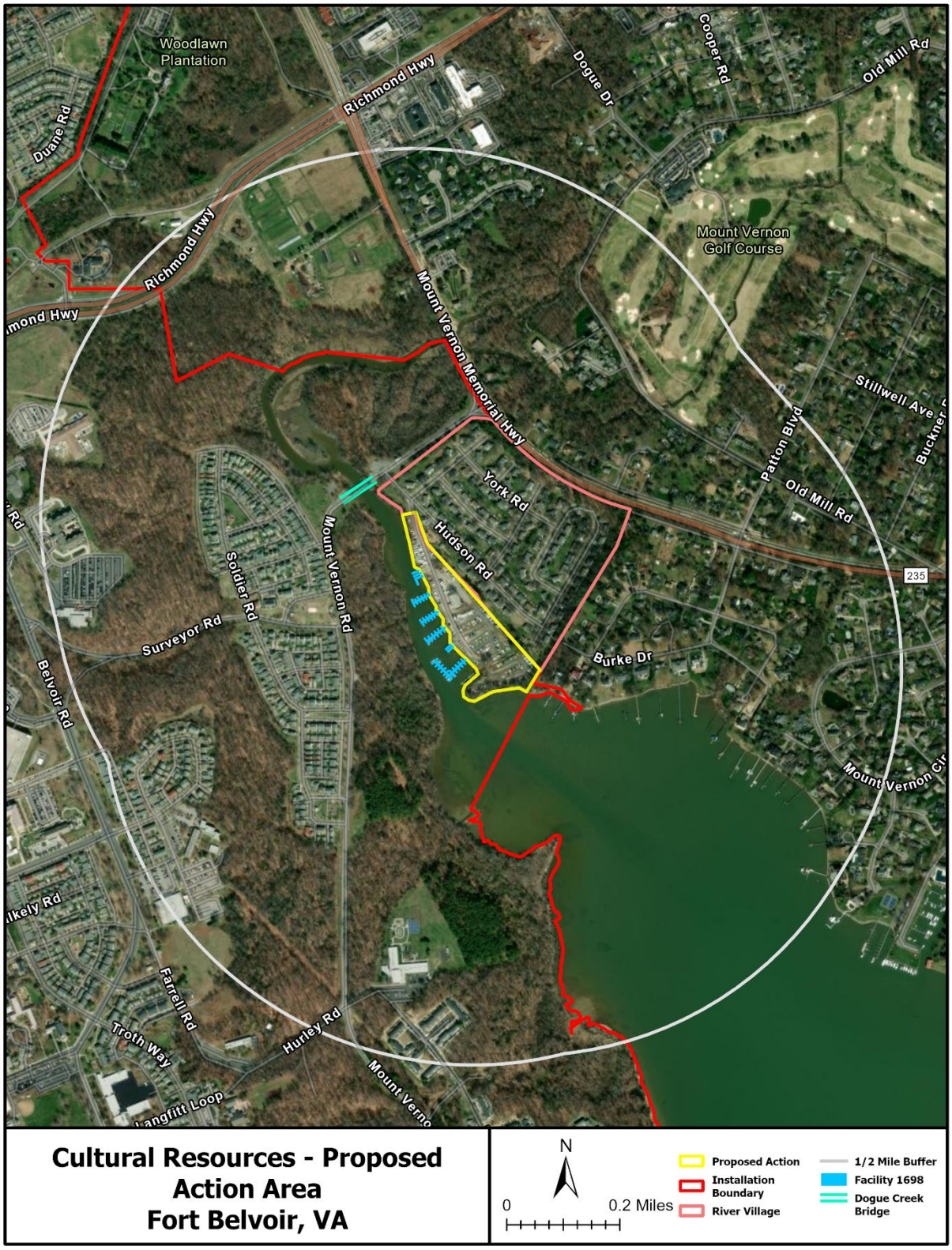

Figure 3-8: Dogue Creek Marina Indirect APE and Cultural Resources

In accordance with Section 106 of the NHPA, consultation was initiated with the VDHR and Fort Belvoir received concurrence from the VDHR on the determination of "no historic properties affected." A record of concurrence is included in **Appendix G**.

Additionally, should cultural artifacts be inadvertently discovered during construction or operation of the Proposed Action, the inadvertent discovery plan described in Fort Belvoir's Integrated Cultural Resources Management Plan (ICRMP) (Fort Belvoir, 2020) would be implemented to ensure notifications are made to appropriate personnel and VDHR.

3.10.2.2 Impacts of Proposed Action

No effects on cultural resources are anticipated from the Proposed Action.

Facility 1698 is not eligible for listing on the NRHP; therefore, is not considered a historic property. The River Village neighborhood and the Dogue Creek Bridge would not be disturbed during the construction or operation of the Proposed Action. These sites are outside of the project LOD and would incur no physical disturbance.

3.10.2.3 Impacts of No Action Alternative

No effects on cultural resources are anticipated from the No Action Alternative. No construction would occur that would alter the state of the sites with the Proposed Action's APE.

3.11 SOCIOECONOMICS

3.11.1 Affected Environment

3.11.1.1 Socioeconomics

Socioeconomics is the relationship between economics and social elements, such as population levels and economic activity. Assessing socioeconomic conditions of a surrounding area is a reliable method in identifying adverse impacts on low-income populations and minorities. A multitude of factors can be used as indicators of economic conditions for a geographic area, such as demographics, median household income, unemployment rates, percentage of dependents living below the poverty level, employment, and housing data. Employment data identifies gross numbers of employees, employment by industry or trade, and unemployment trends. Data on industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region. Socioeconomic data are typically presented at county, state, and national levels to characterize baseline socioeconomic conditions in the context of regional, state, and national trends.

The region of influence (ROI) for this analysis is Fairfax County, Virginia. Fort Belvoir provides significant economic and social impact both directly and indirectly to this county. Fort Belvoir is one of the largest employers in Fairfax County, employing a workforce of over 39,000 employees (Fort Belvoir, 2015c) and providing services to more than 216,050 military, civilians, retirees and

families. Approximately 9,300 people reside on Fort Belvoir. Demographic information for Fairfax County, Virginia and Fort Belvoir is shown on **Table 3-12** below.

Table 3-12: Demographics for Fairfax County, Virginia and Fort Belvoir

Category	Percentage (%)	
	Fairfax County, VA	Fort Belvoir, VA
Under 5 Years of Age	5.7	12.9
Under 18 Years of Age	22.6	48.7
Age 65 and Up	15.6	0.2
White	63.2	56.9
Black or African American	11.1	18.3
Hispanic or Latino	17.7	13.4
American Indian	0.6	0.0
Asian	20.8	2.3
High School Graduate, Age 25 and older	93.2	98.3

**Source: United States Census Bureau (USCB), 2023*

3.11.1.1.1 Household Income and Property Value

Median household income in Fairfax County is $150,113 (in 2023 dollars). The median household income for the State of Virginia is $90,974 and for the U.S. is $78,538 (USCB, 2023). Median household income in Fort Belvoir is $101,237.

The median property value for Fort Belvoir is $244,400, and the homeownership rate is 1.8 percent; most of the Fort Belvoir housing is managed by the Army through privatized housing agreements. The median property value in Fairfax County is $699,700, and the homeownership rate is 68.3 percent (USCB, 2023).

3.11.1.2 Protection of Children

On 21 April 1997, President Clinton issued EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, directing each federal agency to ensure that its policies, programs, activities, and standards address disproportionate environmental health or safety risks to children that may result from the agency's actions. EO 13045 recognizes that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health and safety risks due to still developing neurological, immunological, physiological, and behavioral systems. Examples of risks to children include increased traffic volumes and industrial- or production-oriented activities that would generate substances or pollutants that children could come into contact with and ingest.

The Markham School Age Center, which includes preschool and before and after school care for school age children is approximately .35 miles southwest from southernmost peninsula of the Proposed Action. There are two daycares to the east and west of the site that are approximately 0.4-0.5 miles away.. The Army has taken precautions for the safety of children by limiting access to certain areas, the use of fencing, and providing adult supervision.

3.11.2 Environmental Consequences

3.11.2.1 Thresholds of Significance

A proposed action is evaluated against the following significance criteria to determine if they would result in a significant impact on the socioeconomic environment:

- Substantially change the local population growth rates or employment opportunities
- Create a demand for housing, schools, public facilities, or recreational opportunities that exceeds existing supply

Socioeconomic considerations typically include construction costs and the local economic benefits related to increases in personnel. Economic impacts are defined to include direct effects, such as changes to employment and expenditures that affect the flow of dollars into the local economy, and indirect effects, which result from the "ripple effect" of spending and re-spending in response to the direct effects. Induced impacts are the result of spending of the wages and salaries of the direct and indirect employees on items such as food, housing, transportation, and medical services. This spending creates induced employment in nearly all sectors of the economy, especially service sectors, and can flow beyond the ROI.

Because children may suffer disproportionately from environmental health risks and safety risks, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was issued in 1997 to prioritize the identification and assessment of environmental health risks and safety risks that may affect children and to ensure federal agencies' policies, programs, activities, and standards address environmental and safety risks to children.

3.11.2.2 Impacts of Proposed Action

3.11.2.2.1 Socioeconomics

Short-term, minor, direct and indirect, beneficial impacts to socioeconomics are anticipated to occur during the construction period, due to generation of construction-related jobs which generally stimulate economic activity within the ROI.

Operation of the Proposed Action could provide long-term, minor, direct, beneficial impacts to personnel employed by the travel camp. Operation of the travel camp would foster increased tourism, revenue generation, opportunities of employment and community development.

3.11.2.2.2 Protection of Children

Implementation of the Proposed Action would not pose environmental health or safety risks to children. The closest facility that children frequent is the Markham School Age Care Center is located 0.35 miles from the site and children would not be allowed near the site during construction. Post-construction, there would be no environmental risks for children near or in the Proposed Action site. Impacts would be negligible and would not exceed those to the general population.

3.11.2.3 Impacts of No Action Alternative

Under the No Action Alternative, existing conditions would remain unchanged. There would be no impacts to socioeconomics.

3.12 HUMAN HEALTH AND SAFETY

3.12.1 Affected Environment

Prior land use of the Proposed Action site between 1937 and 1950s was primarily military training activities. Throughout the years, investigations have been conducted on Dogue Creek Marina to evaluate impacts from prior activities and to complete RCRA evaluations. Hazardous waste concerns can be found in **Section 3.5** of this EA.

A HHRA was completed on the Dogue Creek Marina in October 2024 (USACE, 2024b). As part of the HHRA, 26 soils samples were collected form the surface and subsurface through the Dogue Creek Marina site and were analyzed for volatile and semi-volatile compounds, pesticides, PCBs, and metals. Results of the soil samples were used to identify COPCs that were evaluated in the HHRA. The objective of the HHRA was to quantitatively characterize the human health risk associated with current and reasonably expected future exposure to soils at the Dogue Creek Marina. The HHRA concluded that unacceptable cancer risks at the site are not expected from exposures to COPCs in soils.

3.12.2 Environmental Consequences

3.12.2.1 Threshold of Significance

Human health and safety would be significantly impacted if exposure to chemical of potential concern posed an unacceptable cancer risk to construction workers and future users of the site.

3.12.2.2 Impacts of Proposed Action

The Proposed action would have no effect on human health and safety. The HHRA completed concluded that no unacceptable cancer risks from exposure to soils are expected at the site. Workers would follow BMPs and wear appropriate personal protective equipment during demolition and construction activities. Any disturbed and exposed soils would be stabilized and vegetated following construction, in accordance with the site's ESC plan, thereby minimizing any contact with soils.

3.12.2.3 Impacts from No Action Alternative

Implementation of the No Action alternative would have no impacts on human health and safety.

3.13 REASONABLY FORESEEABLE EFFECTS

Under Section 102 of NEPA, reasonably foreseeable effects must be assessed, which are the impact on the environment resulting from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions. A reasonably foreseeable effect can be defined as an effect on the environment that results from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Reasonably foreseeable effects can result from individually minor but collectively significant actions taking place over a period.

3.13.1 Projects Considered for Potential Impacts

The assessment of reasonably foreseeable effects involves identifying and defining the scope of other actions and their interrelationship with a proposed action or alternatives. The scope must consider other projects that coincide with the location and timeline of a proposed action and other actions. Therefore, the reasonably foreseeable effects analysis focuses on past, present, and reasonably foreseeable actions taking place within and immediately adjacent to Fort Belvoir.

Reasonably foreseeable actions that could have a causal relationship to the Proposed Action and Alternatives and contribute to additional impacts on the human environment are discussed in this section. Because the Proposed Action would be largely confined to Fort Belvoir, aside from commuter and operational traffic, only those actions occurring on Fort Belvoir or immediately adjacent to Fort Belvoir are included in this analysis. Brief descriptions of these actions, as available, follow.

Travel Camp Expansion. This is a proposed project that involves the construction of a travel camp, similar to the travel camp in this Proposed Action. The travel camp would be located along Morrow and Theote Road and cover a 20-acre area. This project would be approximately two miles from the Proposed Action. It would include the removal of potentially 20 acres of trees.

Veterinary Clinic. This project has begun at Fort Belvoir and involves the construction of a new 21,950 square foot Veterinary Clinic building in the northwest corner of the intersection of Theote Road and Warren Road. The facility will include a medical facility, parking, and associated infrastructure.

911th Vehicle Engineering Company Complex. The project is underway at Fort Belvoir and entails the consolidation of three separate facilitates into a single, new 911th Engineer Company Complex located on an approximately 10-acre site located north of Route 1 (Richmond Highway) between the Fairfax County Parkway and Accotink Village, on the North Post of Fort Belvoir. The project includes the demolition of two outdated structures at the site, followed by the construction of a medium sized Tactical Equipment Maintenance Facility; an organizational equipment storage building; an organizational vehicle storage building; a petroleum, oil and lubricants storage building; a company operations facility; and an outdoor parking area.

SM-1 Nuclear Reactor Dismantle and Decommission. This project is nearly complete and involves the removal of all buildings, structures, and equipment from the SM-1 site to restore the site to a standard that allows for unrestricted future use. Because work in a floodplain is necessary, a FONPA was completed. This site is located in Gunston Cove.

Recreation Cabins. Ten recreational cabins have been proposed on an approximately 5-acre area bounded to the north by wooded areas, to the east by Morrow Road, to the south by Johnston Road, and to the west by wooded areas. Each cabin would be approximately 900 square feet with a screened in and covered porches, resulting in 12,100 gross square feet for all ten 10 cabins.

3.13.2 Reasonably Foreseeable Effects on Resource Areas

The Proposed Action, when combined with present and reasonably foreseeable future projects, would not result in reasonably foreseeable significant effects on any resource area. Four resource areas that would likely incur reasonably foreseeable effects are discussed below; the other resource areas identified earlier in Section 3 would not incur greater than negligible reasonably foreseeable effects.

3.13.2.1 Water Resources

All projects sited above, apart from the SM-1 Nuclear Reactor Decommissioning, would increase impervious surface of at minimum 20 acres. Fort Belvoir Project proponents would be expected to obtain coverage under applicable permits issued by USACE and VADEQ in accordance with the CWA and would adhere to avoidance, minimization and compensatory mitigation to ensure that impacts to regulated waters would remain minor, and the resulting reasonably foreseeable effects would not be significant.

Th SM-1 Nuclear Reactor Decommissioning would decrease impervious surface and provide beneficial impacts for the removal of hazardous waste associated with the reactor.

3.13.2.2 Biological Resources

Vegetation will incur a minor, indirect, adverse impacts due to the removal of 30 acres of forest for the combined projects. However, Fort Belvoir has in-kind mitigation measures to include replacing any trees four inches or greater dbh that are removed with the planting of two new trees. Out-of-kind compensatory mitigation, such as environmentally beneficial restoration, enhancement, or preservation measures may be completed if in-kind mitigation is not a feasible option (Fort Belvoir, 2018). Pursuant to the *Tree Removal and Protection Policy*, a Tree Protection Plan must be prepared in accordance with Fort Belvoir DPW requirements and included as part of the 35 percent design submittal for construction projects. Therefore, tree removal would be mitigated according to Fort Belvoir Policy.

3.13.2.3 Air Quality

If the Proposed Action were to occur at the same time as other construction efforts under the reasonably foreseeable actions, reasonably foreseeable short-term, minor impacts on air quality

could be expected from construction vehicle emissions. Implementation of BMPs and environmental control measures, such as wetting the ground surface and regular maintenance of work vehicles, would be incorporated at construction areas and during operations to minimize potential impacts. Reasonably foreseeable, long-term, negligible to minor, adverse impacts on air quality would be expected as a result of daily operation of the Proposed Action, and Fairfax County traffic due to vehicle and equipment. Estimated air emissions generated by the Proposed Action would be *de minimis* and activities of this limited size and nature would not result in significant impacts on air quality.

3.13.2.4 Noise

If the Proposed Action were to occur at the same time as other construction efforts under the reasonably foreseeable actions, reasonably foreseeable, short-term, minor impacts on noise could be expected from construction. To minimize the potential adverse impact from these noises, vehicles would be equipped with noise-dampening equipment including mufflers which would be operated according to the manufacturers' instructions and limiting engine idling to less than five minutes. Additionally, construction would take place during daylight hours on weekdays, unless there is a specific action that would require working outside of this normal timeframe, such as mobilizing oversized materials or equipment to the site.

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4 CONCLUSIONS

This EA has been prepared to analyze the potential environmental, cultural, and socioeconomic effects associated with the proposed construction and operation of the Dogue Creek Travel Camp at Fort Belvoir. The travel camp would include a support facility with an office, laundry section, camper's lounge space, restrooms and showers, vending machine space, and parking. Approximately 50 pull-through RV camp sites would be constructed, including concrete vehicle and picnic pads, and water, sewer, and electric hook-ups. Rustic tent camp sites would also be constructed and include tables and grills, water and electrical hook-ups, and vehicle parking spaces. The purpose of this project is to upgrade, construct and operate an approximately 6.5-acre travel camp at Fort Belvoir on the site of the current Dogue Creek Marina to be managed by the MWR's Directorate.

The analysis within this EA concluded that there would be no significant adverse impacts. Minor adverse impacts would occur to soils; topography; surface waters, floodplains, and stormwater; vegetation and wildlife; hazardous waste and toxic material; electricity, potable water, sanitary sewers, telecommunications, and natural gas; noise; air quality; socioeconomics; and reasonably foreseeable effects.

No impacts would occur to land use; geology, groundwater; wetlands, wetlands, RPAs, or coastal zones; cultural and historic properties; protection of children; or human health and safety.

Table 4-1 summarizes the potential consequences the Proposed Action and No Action Alternative could have on the environmental resources.

Based on the evaluation of the environmental consequences in this EA, the Proposed Action would have no significant impacts on the environment, and the preparation of an EIS is not warranted. The preparation of a FONSI is appropriate.

Table 4-1: Summary of Potential Environmental Consequences on Resources

Resource	Proposed Action	No Action Alternative	Permits, Best Management Practices, and Mitigation Measures
Land Use	Negligible, long-term, direct, adverse impacts to land due to variance in land use definition at Fort Belvoir.	No effects	-The Marina would continue to be used as it's historically has been used
Geology, topography, and soils	Short-term and long-term, direct, minor adverse impacts on soils and topography. Soils would be compacted, and soil layer structure would be disturbed and modified. Exposed soils would be susceptible to wind and surface	No effects	-Obtain ground disturbance permits from Fort Belvoir DPW -Follow ESC Plan (to be included in the project civil design plan following review by Fort Belvoir DPW and approval by VADEQ)

Resource	Proposed Action	No Action Alternative	Permits, Best Management Practices, and Mitigation Measures
Geology, topography, and soils	runoff. Topsoil and soil structure would be permanently lost. Topography would be permanently changed with grading. No impacts to geology.		-Follow SWPPP -Obtain Construction General Permit from VADEQ -SWM BMPs would be used to help minimize impacts to exposed soils during and following construction
Water resources (surface water, RPAs, wetlands, floodplains, groundwater, stormwater, and coastal zones)	Minor, short-term adverse impacts on surface water, floodplains, and stormwater. Surface waters could face impacts from soil destabilization from grading and vegetation clearing as well as increase contamination from runoff. Construction would occur in a floodplain, creating a minor impact. Stormwater will have short- and long-term impacts from an increase in impervious surface area. No impacts to groundwater, RPAs, wetlands, or coastal zones.	No effects	-Obtain Construction General Permit -Follow ESC and SWPPP, as referenced above -Design and construction would be performed in accordance with Virginia CZMA policies - All temporarily disturbed areas would be graded and revegetated upon completion of construction -Employ ESC measures during construction, to include silt fencing and sediment traps -Implement LID measures to prevent increased runoff including infiltration berms and porous pavement
Biological resources (vegetation, wildlife, RTE species, and PIF)	Short-term, direct, minor, impacts to vegetation due to the removal of approximately 5 acres of vegetation. Minor, short- and long-term adverse effects to wildlife due to disturbance during construction and permanent loss of habitat. Negligible, direct, short-term impacts to RTE species due to loss of potential habitat.	No effects	-Replanting to offset removal of existing trees within the site would be performed in accordance with Fort Belvoir's Tree Removal and Protection Policy. -Consultation regarding listed species conducted pursuant to Section 7 of the ESA. - To minimize impacts to birds, construction

Resource	Proposed Action	No Action Alternative	Permits, Best Management Practices, and Mitigation Measures
Biological resources (vegetation, wildlife, RTE species, and PIF)			activities would avoid cutting and removal of vegetation from April 1 to July 15. - To protect nesting bat species, no trees over 3 inches in diameter would be removed within the Proposed Action site between April 1 and September 30.
Hazardous Waste and Toxic Materials	Minor, long-term, adverse impacts due to potential accidental spills and increased traffic with potential POL releases and inadvertent spills	Minor, long-term, adverse impacts due to potential accidental spills and increased traffic	-Soils excavated or otherwise disturbed during the project's construction phase would be tested in accordance with established Fort Belvoir policies and procedures. -The construction contractor would be required to prepare and adhere to the Fort Belvoir Spill, Prevention, Control, and Countermeasure Plan
Utilities (Electricity, Potable Water, Sanitary Sewer, Telecommunications, and Natural Gas)	Short-term and long-term, minor, direct adverse impacts to electricity during construction due to usage from construction equipment and rerouting of electric lines. Long-term effects would occur from increased electricity usage. Short- and long-term, direct, minor, adverse effects to potable water, sanitary sewers, telecommunications, and natural gas from line rerouting during construction and increased long-term usage.	No effects	-Any required ground disturbance associated with the extension of existing utilities for connection to the Proposed Action would adhere to the required sediment and erosion control permits. -All short-term impacts would be limited of the immediate vicinity of the Proposed Action - All proposed drinking water connections will adhere to Safe Drinking Water Act requirements

Resource	Proposed Action	No Action Alternative	Permits, Best Management Practices, and Mitigation Measures
Noise	Short-term direct, minor adverse impacts to noise due to temporary construction. Long-term, minor, direct impacts to noise due to operational noises similar to current noise levels.	No effects	-The Fairfax County noise ordinance limits construction noise above 60 dBA for residential areas during weekdays. -Noise levels must not exceed NIOSH or OSHA guidance for construction workers. - Construction vehicles would be equipped with noise dampening equipment -Construction vehicles and equipment would be turned off when not in use for more than five minutes. -Construction would take place during daylight hours on weekdays, unless there is a specific action that would require working outside of this normal timeframe
Air Quality	Short-term, direct, minor impacts to air quality from construction and heavy machinery usage. Long-term, direct, negligible impacts to air quality from operations of the natural gas heating and personnel supporting the buildings.	No effects	-BMPs include: covering truck beds while in transit to reduce fugitive emissions; spraying water on any unpaved roads or stockpiles to limit fugitive emissions; using ultra-low sulfur diesel as a fuel source where appropriate to minimize oxides of sulfur emissions; using clean diesel in construction equipment and vehicles though the implementation of add-on control technologies and using electric-powered equipment in lieu of diesel-powered equipment

Resource	Proposed Action	No Action Alternative	Permits, Best Management Practices, and Mitigation Measures
Air Quality			when feasible; and, implementing control measures for heavy construction equipment and vehicles (e.g. minimizing operating and idling time). -Emissions would be less than *de minimis levels*
Traffic and Transportation	Short-term and long-term, direct, negligible, adverse impacts from construction vehicles and increased traffic from travelers.	No effects	-Roads in Fort Belvoir are sufficient for heavy machinery, requiring no modifications to infrastructure or traffic patterns -Gravel construction pads would be used to remove construction dirt before equipment leaves -Limit the ACPs construction vehicles use
Cultural and Historic Resources	No effects. No historical resources would be impacted in accordance with VDHR consultation.	No effects	-Consultation in accordance with Section 106 of the NHPA required -Inadvertent discovery of cultural resources would be managed according to procedures documented in Fort Belvoir's ICRMP
Socioeconomics and Protection of Children	Short-term, direct and indirect, negligible beneficial impacts to socioeconomics from construction-related jobs stimulating the economy. No effects to protection of children.	No effects	-The Proposed Action would be initiated only after this environmental review has been completed and the appropriate permits are acquired, resulting in assurance of safety and protection of the public, including children. -Proper precautions including the placement of fencing, signage, and other types of barriers would be

Resource	Proposed Action	No Action Alternative	Permits, Best Management Practices, and Mitigation Measures
Socioeconomics and Protection of Children			used to prevent potential harm to all civilians, including children.
Human Health and Safety	No effects	No effects	-Any disturbed and exposed soils would be stabilized and vegetated following construction
Reasonably Foreseeable Effects	Minor, indirect, long-term impacts to water resources due to increases in impervious surfaces. Minor, long-term, indirect, adverse impacts to biological resources due to loss of habitat. Minor, long-term, indirect impacts, adverse impacts to air quality due to increased emissions. Minor, long-term, indirect, adverse impacts to air quality due to increased noise level from construction of projects and operational noises.	No effects	-Fort Belvoir Master Plan accounts for reasonably foreseeable effects and has long-term plans for overall beneficial impacts to the Installation -Adhere to CWA, VADEQ, and USACE permits and regulations for water quality for all projects -Adhere to the tree replacement policy at Fort Belvoir and mitigate tree loss where needed -Implement BMPs to reduce dust and emissions during construction -Use noise dampening equipment for construction vehicles

5 ACRONYMS

ACP	Access Control Point
AIRFA	American Indian Religious Freedom Act
APE	Area of Potential Effect
ARPA	Archaeological Resource Protection Act
BMP	Best Management Practice
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CBPA	Chesapeake Bay Preservation Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO_2	Carbon Dioxide
COPC	Chemicals of Potential Concern
CRMP	Coastal Resources Management Program
CWA	Clean Water Act
CY	Calendar Year
CZMA	Coastal Zone Management Act
dB	Decibel
dBA	A-weighted Decibel
dbh	Diameter at Breast Height
DNL	Day-night Average Sound Level
DoD	Department of Defense
DPW	Directorate of Public Works
DVP	Dominion Virginia Power
EA	Environmental Assessment
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
ESA	Endangered Species Act
ESC	Erosion and Sediment Control
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
HAP	Hazardous Air Pollutants
HHRA	Human Health Risk Assessment
I	Interstate
ICPRB	Interstate Commission on the Potomac River Basin
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
IPaC	Information for Planning and Consultation
IRP	Installation Restoration Program

ISW	Industrial Stormwater
LID	Low Impact Development
LOD	Limits of Disturbance
LOS	Level of Service
mNSR	minor New Source Review
MS4	Municipal Separate Storm Sewer System
MSL	Mean Sea Level
MWR	Morale, Welfare, and Recreation
NAAQS	National Ambient Air Quality Standards
NAGRPRA	Native American Graves Protection and Repatriation Act
NCR	National Capital Region
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
NIOSH	National Institute for Occupational Safety and Health
NLEB	Northern Long-Eared Bat
NOI	Notice of Intent
NO_X	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSR	Noise-sensitive Receptor
O_3	Ozone
OSHA	Occupational Safety and Health Administration
Pb	Lead
PCB	Polychlorinated Biphenyls
PFO	Palustrine Forested
PIF	Partners in Flight
PM	Particulate Matter
PM_{10}	Particulate Matter 10 Micrometers
$PM_{2.5}$	Particulate Matter 2.5 Micrometers
POL	Petroleum Oil and Lubricants
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigations
ROI	Region of Influence
RONA	Record of Non-Applicability
RPA	Resource Protection Areas
RTE	Rare, Threatened, and Endangered
RV	Recreational Vehicle
SF	Square Foot
SHPO	State Historic Preservation Office
SNA	Special Natural Area
SO2	Sulfur Dioxide
SO_X	Sulfur Oxides
SWM	Stormwater Management
SWMU	Solid Waste Management Unit

SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TPH	Total Petroleum Hydrocarbons
TPY	Tons Per Year
TSS	Total Suspended Solids
UP	Utilities Privatization
USACE	U.S. Army Corps of Engineers
USAG-FB	U.S. Army Garrison Fort Belvoir
USC	United States Code
USCB	United States Census Bureau
USDA	U.S. Department of Agriculture
USEIA	U.S. Energy Information Administration
USEPA	Environmental Protection Agency
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	United States Geological Survey
UXO	Unexploded Ordnance
VAC	Virginia Administrative Code
VADEQ	Virginia Department of Environmental Quality
VDHR	Virginia Department of Historic Resources
VOC	Volatile Organic Compounds
VPDES	Virginia Pollutant Discharge Elimination System
WOUS	Waters of the United States
WWI	World War I
WWII	World War II

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6 LIST OF PREPARERS

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APPENDICES

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APPENDIX A – AGENCY COORDINATION

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NOTICE OF AVAILABILITY
FOR THE ENVIRONMENTAL ASSESMENTAND
DRAFT FINDING OF NO SIGNIFICANT IMPACT FOR THE
PROPOSE DOGUE CREEK MARINA TRAVEL CAMP
FORT BELVOIR, VIRGINIA

The U.S. Army Garrison Fort Belvoir hereby gives Notice of the Availability (NOA) for the draft Environmental Assessment (EA) and draft Finding of No Significant Impact (FONSI) for the proposed construction of a travel camp at the current Dogue Creek Marina that would result in approximately 6.5-acres of recreational space for campers and RV owners. The travel camp would include a support facility with an office, laundry section, camper's lounge space, restrooms and showers, vending machine space, and parking, and approximately 50 pull-through RV camp sites with picnic pads, and water, sewer, and electric hook-ups. The purpose of this project is to upgrade, construct and operate a travel camp at Fort Belvoir to be managed by the Installation Management Command's Morale Welfare and Recreation Directorate. The Proposed Action would provide needed space for customers at Fort Belvoir in a highly desirable waterfront area with access to the Potomac River.

The Draft EA has been prepared in accordance with the regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA), (Public Law 91-190, 42 USC 43214347 January 1, 1970), amendments, and the Army's Implementing Regulations (32 CFR Part 651, *Environmental Analysis of Army Actions).* The EA is available to view in printed form at the Fort Belvoir Library and the Kingstowne Branch and Sherwood Regional Branch of the Fairfax County Public Library system, or to view/download electronically at https://home.army.mil/belvoir/index.php/about/Garrison/directorate-public-works/environmental-division. Click the "Programs and Documents" tab, then "National Environmental Policy Act (NEPA) Program." Information about the EA and links to download the various documents are provided under the "Open for Public/Agency Review & Comment" heading.

Comments or questions on the draft EA and draft FONSI may be directed in writing to: Environmental Division, Directorate of Public Works, Building 1442, 9430 Jackson Loop, Fort Belvoir, VA 22060, or by email to: belvoir.travel.camp.nepa@usace.army.mil. Comments must be received no later than 30 days after publication of this NOA.

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DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT BELVOIR
9820 FLAGLER ROAD, SUITE 213
FORT BELVOIR, VIRGINIA 22060-5928

Directorate of Public Works

Chief Brian Harris
Catawba Indian Nation
996 Avenue of the Nations
Rock Hill, SC 29730

Dear Chief Harris:

Respecting the Catawba Indian Nation's sovereignty and in recognition of our government-to-government relationship, U.S. Army Garrison Fort Belvoir invites you to consult on a new proposed action. Fort Belvoir is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, and socioeconomic effects associated with the construction of a new Recreational Vehicle (RV) travel camp at the Dogue Creek Marina on Fort Belvoir, Virginia (Enclosures 1-4).

In accordance with Section 106 of the National Historic Preservation Act, 36 Code of Federal Regulations § 800, and Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, your participation and comments are requested. We invite you to be a consulting party in this review to help identify historic properties in the project area that may have religious and cultural significance to your tribe. Historic properties include archeological sites, burial grounds, sacred landscapes or features, ceremonial areas, traditional cultural places and landscapes, plant and animal communities, and buildings and structures with significant tribal association.

While the construction of a new travel camp is expected to have minor adverse effects on the immediate area, Fort Belvoir has determined it will not be an adverse effect to cultural and historic resources, as much of the area has been disturbed previously. The draft EA provides supporting information and details on the project.

Please provide written response if your nation would want to consult with Fort Belvoir on the draft EA within 30 days from the date of this letter.

If you have any questions or concerns, please feel free to contact Mr. Kenneth W. Aunchman, Cultural Resource Manager, at kenneth.w.aunchman.civ@army.mil or 520-673-1786 or Mr. Richard Santos, Chief, Environmental Division at richard.a.santos.civ@army.mil or 703-806-3193. We look forward to consulting and reviewing comments with the Catawba Indian Nation regarding the proposed project.

Point of contact is Mr. Yun Heo, Director of Public Works, at 703-806-3017 or yun.heo.civ@army.mil.

Sincerely,

DAVID J. STEWART
COL, U.S. Army
Commanding

Enclosures

Enclosure 1: Fort Belvoir Area Location

Enclosure 2: Proposed Travel Camp Project Location

Enclosure 4: Supplemental Project Information

Proposed Undertaking: As defined by 36 CFR § 800, the Directorate of Family, Morale, Welfare, and Recreation (DFMWR) is proposing an undertaking to construct a travel camp that would result in approximately 6.5-acres of recreational space for campers and recreational vehicle (RV) owners within the existing Dogue Creek Marina facility at Fort Belvoir, Fairfax County, Virginia (Enclosures 1-2). The camp would include a support facility with an office, laundry section, camper's lounge space, restrooms and showers, vending machine space, and parking. Approximately 50 pull-through RV camp sites would be constructed, including concrete vehicle and picnic pads, and water, sewer, and electric hook-ups. Approximately 15 rustic tent camping spots would be situated within the small, unpaved peninsula in the southwestern portion of the proposed project area. Rustic tent camp sites would include tables and grills, water and electrical hook-ups, and vehicle parking spaces. Paved vehicle circulation roads, walking paths, landscaping, street and site lighting, sewage lift stations, storm water management, utility upgrades, and area directional signage would also be included.

The proposed undertaking would displace a large number of the dry slips. The existing marina infrastructure, including the piers (and their associated wet slips), boat lift, two-lane boat ramp, and kayak launch with finger pier, would remain in place. The existing approximately 11,000 square foot (SF) Building 1696, located in the vicinity of where Delaware Road forks, would be demolished and replaced with an approximately 10-25 space paved parking lot located south of the new 3,000 SF camp support building. The RV spaces would be configured to allow pull-through access for full-sized rigs and access roads would provide for adequate maneuvering space in/out of individual spaces as well as into and out of the facility. Beautification of the shoreline through strategic plantings would add aesthetic appeal to this waterfront location, but no work to alter the shoreline through grading or adding armaments (such as riprap or bulkheads) is part of this proposed undertaking, and no alterations to the marina infrastructure (e.g., in-water work) are part of this proposed undertaking. Specific details regarding the final size of the camp support building, number of RV and camper spaces, and configuration of the roadways will be developed as the project moves through the design phases.

The purpose of this undertaking is to provide adequate outdoor camping opportunities for the Fort Belvoir/National Capital Region customers. This would provide Fort Belvoir customers additional space for camp sites in the Northern Virginia region, with convenient access to Washington D.C. and affordable prices compared to commercialized campsites.

Area of Potential Effects (APE): The direct APE is defined as the approximately 6.5-acre limits of disturbance (LOD) for the proposed undertaking (Enclosure 3), and the indirect APE consists of areas from which the construction activities and new travel camp would be visible. The APE is directly shielded by woods across the creek to the east and by tree lines along the marina's north and south. The travel camp would be located within the southeast two-thirds of the marina facility on Fort Belvoir's South Post, adjacent to

the installation's River Village neighborhood. The APE includes the marina facility and east adjacent River Village neighborhood.

Identification of Historic Properties: U.S. Army Garrison Fort Belvoir has taken steps to identify historic properties within the APE. The APE was reviewed for previously recorded cultural resources and surveys using the Virginia Department of Historic Resources (VDHR's) online Virginia Cultural Resources Information System (VCRIS). According to VCRIS, three cultural resources surveys, including a Phase I cultural resources survey (FX-097), a Phase II architectural evaluation (FX-255), and a Phase I archaeological survey (FX-257), have been previously conducted within the APE; none of these surveys identified cultural resources within the APE. Based on review of VCRIS, there are no known archaeological resources and four previously recorded architectural resources within the APE.

Resource 1593 (DHR ID# 029-6228) is the marina's northern access gate, built in 1960, for which VDHR provided concurrence with the Army's determination of non-eligibility for listing on the National Register of Historic Places (NRHP) on January 30, 2018.

Building 1695 (DHR ID# 029-5491), constructed in 1960, is a lift station within the APE. It has been evaluated under DHR File Number 2017-0493 (Section 110 Submission, Architectural Survey and Evaluation, U.S. Army Garrison, Fort Belvoir, Virginia), for which VDHR provided concurrence with the Army's determination of non-eligibility for listing on the NRHP on January 30, 2018.

Building 1696, also constructed in 1960, is an approximately 4,200 square foot boathouse proposed to be demolished as part of this undertaking. This structure was also evaluated for eligibility pursuant to Section 110 of the NHPA and received VDHR's concurrence on the Army's determination of non-eligibility on the same date as the lift station.

Also within the APE is the marina facility itself, identified as Facility No. 1698 (5465 Hudson Road) (DHR ID# 029-6829). The facility was constructed in 1965 and evaluated for potential eligibility for listing in February 2020. The evaluation recommended a determination of non-eligibility for the facility due to its lack of architectural significance and its lack of relation to the established architectural and historical significance of Fort Belvoir. Further, this facility is outside the boundaries of the Fort Belvoir Historic District. The adjacent River Village neighborhood, covered under the Capehart-Wherry Program Comment, was also not recommended as eligible due to its lack of architectural significance and lack of shared linkages of association, design, and history.

Based on review of Fairfax County historical aerial imagery, the APE was developed over the course of the mid-late 20th century. On 1937 aerial imagery, the LOD consists of a field with tree lines along Dogue Creek. By 1953, unpaved roadways, small docks, boat slips, and other small facilities are visible within the LOD. The marina facilities, including Buildings 1695 and 1696 and the east adjacent River Village neighborhood are seen on 1960 aerial imagery. Additional boat slips, docks, and roadways within the

marina facility are visible on 1972 aerial imagery. The unpaved roadways are paved by 1976. The marina facility is further developed with additional docks along Dogue Creek and to the south for construction of additional boat slips throughout the mid-late 20th century to the present day.

NEPA: The U.S. Army Garrison Fort Belvoir will be coordinating its Section 106 review with its environmental assessment (EA) conducted for the proposed project under the National Environmental Policy Act of 1969 (42 United States Code Section 4321 et seq.), herein known as NEPA. Once prepared, this EA will be sent out for public review and comment. The EA will examine the project's potential environmental impacts.

Assessment of Effects: While the construction of a new travel camp is expected to have minor adverse effects on the immediate area, Fort Belvoir has determined it will not be an adverse effect to cultural and historic resources, as much of the area has been disturbed previously. Based on review of the Virginia Cultural Resources Information System (VCRIS), there are no known archaeological resources within the Area of Potential Effects (APE), which includes the project's limits of disturbance and areas from which construction activities and the new travel camp would be visible (Enclosure 3). Should archaeological artifacts or features be encountered during construction, all construction activities in the immediate vicinity of the discovery would stop and VDHR and federally recognized tribes would be contacted immediately to determine appropriate treatment.

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APPENDIX B – WETLAND MEMO

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DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT
2 HOPKINS PLAZA
BALTIMORE, MD 21201-2930

CENAB-PL-I 18 June 2025

MEMORANDUM FOR: Richard Santos, Chief, Environmental Division, Directorate of Public Works, Building 1442, 9430 Jackson Loop, Fort Belvoir, VA 22060

SUBJECT: Results of Water Resources Survey for the proposed Dogue Creek Marina Travel Camp at Fort Belvoir, Fairfax County, Virginia

1. In support of National Environmental Policy Act (NEPA) documentation needed for a proposed Dogue Creek Marina Travel Camp (DCMTC) at Fort Belvoir, biologists from the U.S. Army Corps of Engineers (USACE) Baltimore District Planning Division conducted a water resources survey on 25 April 2025. The water resources survey was needed to identify and delineate the extent of any potentially regulated wetlands and/or streams within the Dogue Creek study area.

2. Fort Belvoir policy, as outlined in the *Fort Belvoir Directorate of Public Works Environmental and Natural Resources Division (DPW-ENRD) Guide for Project Sites with Waters of the U.S., Resource Protection Areas (RPAs) and Stream Buffers*, requires a water resource survey to identify Waters of the United States (WOUS) for all projects where natural resources may be impacted. All perennial streams and associated wetlands require a 100-foot RPA buffer while intermittent streams and associated wetlands require a 35-foot RPA buffer.

3. The DCMTC would be located at the current Dogue Creek Marina adjacent to the River Village neighborhood on the eastern shore of Dogue Creek. The Dogue Creek Marina is currently a gated facility with 111 wet slips, 300 dry storage spaces, 6 covered dry storage stalls, a two-lane boat launch ramp, a kayak launch pier, and one travel lift. The DCMTC would result in approximately 6.5-acres of recreational space for campers and RV owners. The total LOD of the DCMTC is approximately 9.5 acres. No in-water work would occur on the site.

4. The southern and central portions of Fort Belvoir are situated on the Coastal Plain Physiographic Province. The Potomac Group, which makes up the majority of the Coastal Plain Physiographic Province under Fort Belvoir, is characterized by lens-shaped deposits of interbedded sand, silt, clay, and gravel, primarily of nonmarine origin. Topography does not vary significantly at the DCMTC site, with the highest elevation approximately 2 feet above mean sea level (MSL), located on the shoreline edges, and the lowest elevation approximately 0 feet above MSL located in the central portion of the site.

5. There were no WOUS, their associated wetlands, or isolated wetlands identified within the study area during the survey. The wetland delineation was conducted in accordance with the U.S. Army Corps of Engineers Wetland Delineation Manual as well as the Regional Supplement to the U.S. Army Corps of Engineers Manual, Atlantic and Gulf Coastal Plain Region. Two data points were analyzed to support this finding. The Wetland Determination Data Sheets can be found in Enclosure 2. There were three grass swales that flow into Dogue Creek identified on the site that did not meet the criteria to be considered WOUS.
6. Please provide any questions or comments to Ms. Lauren Joyal at lauren.e.joyal@usace.army.mil.

2 Encl.
1. Surface Waters at DCMTC
2. Wetland Data Sheets

AMY M. GUISE
Chief, Planning Division

Enclosure 1. Surface Waters at DCMTC

Enclosure 2. Wetland Data Points

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Dogue Creek Marina-Ft Belvoir City/County: Faifax County Sampling Date: 04/25/25

Applicant/Owner: Fort Belvoir State: VA Sampling Point: DP 1

Investigator(s): Lauren Joyal, Christina Olson Section, Township, Range:

Landform (hillside, terrace, etc.): Fill above shoreline Local relief (concave, convex, none): Flat Slope (%): 0

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 38 42' 20" N Long: 77 7' 46" W Datum: NAD83

Soil Map Unit Name: Urban Land, Grist Mill-Mattapex NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Small area of brush along shoreline. Steep drop to Dpogue Creek (tidal). All upland- small area of mowed grass next to brush

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants.

Sampling Point: DP 1

Tree Stratum (Plot size: 20 ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Robinia pseudoacacia*	30	Yes	UPL
2. *Prunus serotina*	15	Yes	FACU
3.			
4.			
5.			
6.			
	45	=Total Cover	
50% of total cover: 23		20% of total cover: 9	

Sapling Stratum (Plot size: 20 ft)			
1. *Juniperus virginiana*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
	5	=Total Cover	
50% of total cover: 3		20% of total cover: 1	

Shrub Stratum (Plot size: 20)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Herb Stratum (Plot size: 10)			
1. *Toxicodendron radicans*	15	Yes	FAC
2. *Smilax rotundifolia*	10	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25	=Total Cover	
50% of total cover: 13		20% of total cover: 5	

Woody Vine Stratum (Plot size: 10 ft)			
1. *Lonicera japonica*	40	Yes	FACU
2. *Hedera helix*	5	No	FACU
3.			
4.			
5.			
	45	=Total Cover	
50% of total cover: 23		20% of total cover: 9	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	25	x 3 =	75
FACU species	65	x 4 =	260
UPL species	30	x 5 =	150
Column Totals:	120 (A)		485 (B)
Prevalence Index = B/A =			4.04

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL Sampling Point: DP 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	7.5YR 4/6	100					Sandy	Sandy loam w pea gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Bright soils, no redox. Could not dig further than 4", likely fill

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Atlantic and Gulf Coastal Plain Region
See ERDC/EL TR-10-20; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: Dogue Creek Marina-Ft Belvoir City/County: FairfaxCounty Sampling Date: 04/25/25

Applicant/Owner: Fort Belvoir State: VA Sampling Point: DP 2

Investigator(s): Lauren Joyal and Christina Olson Section, Township, Range:

Landform (hillside, terrace, etc.): Slope to Creek Local relief (concave, convex, none): Sloped Slope (%): 3

Subregion (LRR or MLRA): LRR S, MLRA 149A Lat: 38°42'31"N Long: 77°7'52"W Datum: NAD83

Soil Map Unit Name: Urban Land, Grist Mill-Mattapex NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Location-20 feet of brush above Dogue Creek. S end of LOD near proposed tent sites. 15 feet to the water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T, U)**

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: DP 2

Tree Stratum (Plot size: 20ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
	10	=Total Cover	
50% of total cover: 5		20% of total cover: 2	
Sapling Stratum (Plot size: 20ft)			
1. *Morus rubra*	10	Yes	FACU
2. *Quercus palustris*	5	Yes	FACW
3. *Sassafras albidum*	5	Yes	FACU
4.			
5.			
6.			
	20	=Total Cover	
50% of total cover: 10		20% of total cover: 4	
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
		=Total Cover	
50% of total cover:		20% of total cover:	
Herb Stratum (Plot size: 10 ft)			
1. *Toxicodendron radicans*	10	Yes	FAC
2. *Rubus allegheniensis*	8	Yes	UPL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	18	=Total Cover	
50% of total cover: 9		20% of total cover: 4	
Woody Vine Stratum (Plot size: 10 ft)			
1. *Parthenocissus quinquefolia*	10	Yes	FACU
2. *Celastrus orbiculatus*	10	Yes	FACU
3. *Lonicera japonica*	15	Yes	FACU
4. *Campsis radicans*	10	Yes	FAC
5.			
	45	=Total Cover	
50% of total cover: 23		20% of total cover: 9	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 10 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	30	x 3 =	90
FACU species	50	x 4 =	200
UPL species	8	x 5 =	40
Column Totals:	93 (A)		340 (B)

Prevalence Index = B/A = 3.66

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub - Woody Plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody Vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: DP 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
Top v	7.5YR 3/3	100					Loamy/Clayey	Loamy sand
4-6	10YR 4/6	60	10YR 3/3	40	D	M	Sandy	Sandy loam
6-12	10YR 4/6	100					Sandy	Sandy loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(MLRA 149A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Bottom very sandy. Top very loamy. Very dry soils. Lots of organic matter in the first layer.

APPENDIX C – COASTAL ZONE MANAGEMENT ACT FEDERAL CONSISTENCY DETERMINATION

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Determination of Consistency with Virginia's
Coastal Resources Management Program

This document provides the Commonwealth of Virginia with the Fort Belvoir Consistency Determination under the Coastal Zone Management Act Section 307(c)(1) and 15 Code of Federal Regulations (CFR) Part 930, Subpart C, for Fort Belvoir, Fairfax County, Virginia. The information in this Consistency Determination is provided pursuant to 15 CFR § 930.39.

This document represents an analysis of project activities in light of established Virginia Coastal Resources Management Program (CRMP) Enforceable Policies and Programs. Furthermore, submission of this consistency determination reflects the commitment of the U.S. Department of the Army (Army) to comply with those enforceable policies and programs. The Proposed Action would be implemented in a manner that is consistent with the Virginia CRMP. The Army has determined that the construction and operation of the Fort Belvoir Dogue Creek Marina Creek would have a negligible impact on any land and water uses or natural resources of the Commonwealth of Virginia's coastal zone.

C1 Description of Proposed Action

The Proposed Action would be located adjacent to the River Village neighborhood on Fort Belvoir's South Post, on the site of the existing Dogue Creek Marina on the eastern shore of the 8.5-mile long Dogue Creek (**Figure 1)**. The Dogue Creek Marina is a gated facility with 111 wet slips, 300 dry storage spaces, 6 covered dry storage stalls, a two-lane boat launch ramp, a kayak launch pier, and one travel lift, and is currently operated by the Fort Belvoir Family and Morale, Wellness, and Recreation (MWR) Directorate to provide recreation opportunities for active duty and retired military Service members and DoD civilians. The Proposed Action does not intend to do any construction or work in the water or along the shoreline, with the exception of the planting of native aesthetic trees near the shore.

Construction would displace a large number of the dry slips. The current conceptual site layout is shown in **Figure 1**. The existing marina infrastructure, including piers (and their associated wet slips), boat lift, two-lane boat ramp, and kayak launch with finger pier, would remain in place. The existing approximately 7,500 square foot (SF) Building 1696, located in the vicinity of where Delaware Road forks, would be demolished and replaced with an approximately 10-25 space paved parking lot located south of the new 3,000 SF camp support building. Approximately 15 rustic tent camping spots would be apportioned on the unpaved peninsula in the southwestern portion of the Proposed Action area. RV spaces would be configured to allow pull-through access for full-sized rigs and access roads would provide for adequate maneuvering space in/out of individual spaces as well as into and out of the facility itself. Beautification of the shoreline through strategic plantings will add aesthetic appeal to this waterfront location, but no work to alter the shoreline through grading or adding armaments (such as riprap or bulkheads) is part of this Proposed Action, and no alterations to the marina infrastructure (e.g., in-water work) are part of this Proposed Action. Specific details regarding the final size of the camp support building, number of RV and camper spaces, and configuration of the roadways will be developed as the project moves through the design phases, to be initiated once full project funding is appropriated.

C2 Assessment of Probable Effects

The Army is preparing a draft Environmental Assessment (EA) to evaluate the potential environmental impacts from the travel camp facility in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code 4321-4347), and 32 CFR Part 651, *Environmental Analysis of Army Actions*.

The Army intends to obtain all applicable permits required for implementation of the Proposed Action. A review of the permits and/or approvals required under the enforceable policies is being conducted. The Army has evaluated the construction of the Proposed Action for its foreseeable effects on the following enforceable policies:

Marine Fisheries – The Proposed Action has no foreseeable impacts on fish or shellfish resources and would not affect the promotion of, or access to, commercial or recreational fisheries. The proposed site is located at the current Dogue Creek Marina, which sits on the eastern shore of Dogue Creek, flowing directly into the Potomac River. Compliance with the installation's Municipal Separate Storm Sewer System (MS4) Permit and the Virginia Erosion and Sediment Control (ESC) regulations would minimize the risk of sediment being transported off the site to the Potomac River Fishery. Best Management Practices (BMPs) recommended by the Virginia Departments of Conservation and Recreation and Forestry would be employed when necessary.

Wildlife and Inland Fisheries – There are no wildlife or inland fisheries located near the Proposed Action. The project would have no foreseeable impacts on wildlife or inland fisheries.

Subaqueous Lands Management – The Virginia Marine Resources Commission, pursuant to Virginia Administrative Code (VAC) Section 28.2-1204, has jurisdiction over encroachments in, on, or over any State-owned rivers, streams, and creeks. The Proposed Project would have no foreseeable impacts on subaqueous resources.

Tidal and Non-tidal Wetlands Management – The Proposed Action would not affect any tidal or non-tidal wetlands. There are no tidal or non-tidal wetlands located within the Proposed Action area. ESC regulations and Stormwater Management (SWM) plans would avoid and minimize impacts to wetlands outside of the Proposed Action area. Permanent SWM features would be employed using Low Impact Development (LID) measures to minimize impacts from the increase in impervious surfaces due to the Proposed Action and help protect wetlands outside of the area.

Dunes Management – The Proposed Action would not affect any coastal primary sand dunes.

Non-Point Source Water Pollution Control – Typically, a Proposed Action that is greater than 2,500 square feet would require an ESC plan and a SWM plan to be developed. The ESC plan would include temporary erosion and sediment control measures. The ESC plan and SWM plan would be prepared utilizing the requirements found in Chapter 875 Virginia Erosion and Stormwater Management Regulation Part V. Article 3. Water Quantity and Water Quality Technical Criteria (9 VAC 25-875-570 through 9 VAC 25-875-660). The Proposed Action would disturb approximately 6.5 acres of land; therefore, an ESC plan and SWM plan are required. A construction general permit in accordance with 9 VAC 25-830-130 would also be required. Short- term, minor, adverse impacts would occur from the

Proposed Action on surface water with regard to water quality. Appropriate temporary erosion and sediment control measures and stormwater BMPs would be employed to minimize impacts to water quality from earth disturbance and potential erosion during construction.

Point Source Water Pollution Control – The Proposed Action would not result in point source water discharge.

Shoreline Sanitation – The Proposed Action is located on the edge of Dogue Creek. This project would not include any in-water work at all. In March 2024, the Army collected surface and subsurface soil samples from the Marina for a human health risk assessment. Detected constituents exceeding industrial Regional Screening Levels consisted of arsenic (22-140 mg/kg) in sample Marina 07 near the shoreline and isolated polychlorinated biphenyls (PCBs) in surface soil samples Marina 02 and Marina 05 near stored watercraft. As a conclusion, unacceptable hazards to receptors at the site are not expected from assumed exposures to chemicals of potential hazard in soils. Any boats currently stored at the marina that are not being maintained and could be leaching chemicals into soils would have to be moved and stored off-site. The proposed travel camp has site and street lighting, sewage lift stations, storm water management and utility upgrades.

Air Pollution Control (Points Source Pollution) – The Proposed Action area is located within an ozone non-attainment area, triggering the need to analyze emissions and determine the applicability of the General Conformity Rule under the Clean Air Act. A construction emissions estimate indicates that construction and operation activity would not generate sufficient emissions to trigger a need for a full General Conformity Analysis. The estimated emissions associated with the construction and operation of this Proposed Action are very low. The temporary impacts to air quality would be short-term, minor impacts that would not be regionally or locally significant.

Chesapeake Bay Protection Areas – Resource Protection Areas (RPAs) are associated with Dogue Creek, and its associated wetlands. There are no RPAs located in the Proposed Action area that would be impacted in the Proposed Action area (**Figure 1**). Appropriate temporary ESC control measures and SWM BMPs would be employed at the construction site to minimize downstream impacts to Dogue Creek and the Potomac River from earth disturbance associated with construction activities. SWM BMPs using LID would help minimize any long-term impacts to these surface waters from the increase in impervious area in the Proposed Action area.

Plant Pests and Noxious Weeds – The Proposed Action would not involve the movement of plant pests or noxious weeds. Following construction, the Proposed Action site would be landscaped, per a DPW approved landscape plan, with native grass, shrubs and tree species coordinated with the Fort Belvoir Environmental Division staff to ensure that no invasive species would be introduced, and planting enhances wildlife habitat in a low-maintenance manner consistent with master planning objectives. Approximately 0.92-acres of vegetation would be removed for the project. This would be offset by a combination of replanting within the Proposed Project site whenever possible through landscaping in accordance with Fort Belvoir's Tree Removal and Protection Policy, requiring a 2:1 replacement ratio. However, the majority of the vegetation to be removed to overgrown brush and not forested area.

Commonwealth Lands – The Proposed Action would not affect any commonwealth lands. There are no commonwealth lands within or in close proximity to the project boundary

C3 Summary of Findings

Based on the above analysis, which is elaborated on in the EA, Fort Belvoir personnel would: (1) ensure that the construction contractor uses and maintains appropriate temporary erosion and sediment controls; and (2) obtain the requisite permits and approvals. The Army finds that the proposed travel camp facility construction is fully consistent to the maximum extent practicable with the federally approved enforceable provisions of the Virginia CRMP, pursuant to the Coastal Zone Management Act of 1972, as amended and in accordance with 15 CFR 930.30.

Pursuant to 15 CFR Part 930.41, the Virginia CRMP has 60 days from receipt of this letter in which to concur with or object to this Consistency Determination, or to request an extension, in writing, under 15 CFR Part 930.41(b). Virginia's concurrence will be presumed if its response is not received by the Army on the 60th day from receipt of this determination. The state's response should be sent to U.S. Army Garrison Fort Belvoir, 9430 Jackson Loop, Suite 200, Fort Belvoir, VA 22060-5116.

David J. Stewart
Colonel, U.S. Army
Commanding

Figure 1: Proposed Project Location at Fort Belvoir

Figure 2: Surface Waters at Proposed Location

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APPENDIX D – FINDING OF NO PRACTICABLE ALTERNATIVE

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DEPARTMENT OF DEFENSE
UNITED STATES ARMY
FINDING OF NO PRACTICABLE ALTERNATIVE (FONPA)
FOR THE DOGUE CREEK TRAVEL CAMP AT
FORT BELVOIR, VIRGINIA

1.0 INTRODUCTION

Fort Belvoir is located approximately 18 miles southwest of Washington, DC, and 17 miles south of the Pentagon, on the Potomac River in Fairfax County, Virginia (Figure 1). Fort Belvoir contributes to the nation's defense by providing a secure operating environment for regional and worldwide Department of Defense (DoD) missions and activities. It also provides housing, medical services, recreational facilities, and other support services for active-duty military members, families, and retirees in the National Capital Region (NCR).

To support recreational opportunities within Fort Belvoir, the Department of the Army (Army) proposes to make improvements to the existing Dogue Creek Marina by constructing a travel camp that would result in approximately 6.5-acres of recreational space for campers and RV owners. Dogue Creek Marina is located adjacent to the River Village neighborhood on Fort Belvoir's South Post, on the eastern shore of the 8.5-mile long Dogue Creek (Figure 2). The Dogue Creek Marina is a gated facility with 111 wet slips, 300 dry storage spaces, 6 covered dry storage stalls, a two-lane boat launch ramp, a kayak launch pier, and one travel lift. The marina is currently operated by the Fort Belvoir Family and Morale, Wellness, and Recreation (MWR) Directorate to provide recreational opportunities for active duty and retired military service members and DoD civilians. The Proposed Action would provide needed space for customers at Fort Belvoir in a highly desirable waterfront area with access to the Potomac River.

Executive Order (EO) 11988, *Floodplain Management*, requires federal agencies to determine whether a proposed action will occur within a floodplain and to avoid floodplains to the maximum extent possible when there is a practicable alternative. The 100-year floodplain is defined as an area adjacent to a water body that has a 1 percent or greater chance of inundation in any given year.

Publication in the Federal Register of the Notice of Availability (NOA) for the Draft Environmental Assessment (EA) commences a 30-day public review period. The notice also states that the 30-day public review period applies to this Draft Finding of No Practicable Alternative (FONPA). Written comments on the Draft FONPA may be submitted to the U.S. Army Corps, Baltimore District, Planning Division Attn: Ms. Lauren Joyal, 2 Hopkins Plaza, Baltimore MD 21201 or email comments to lauren.e.joyal@usace.army.mil.

Fort Belvoir has also established a webpage that contains a Draft FONPA at https://home.army.mil/belvoir/index.php/about/Garrison/directorate-publicworks/environmental-division. If you cannot access the Draft FONPA online,

please submit a request to Ms. Lauren Joyal at lauren.e.joyal@usace.army.mil by mail to the address provided above so materials can be sent to you.

2.0 PROPOSED ACTION

The Proposed Action involves the construction and operation of a travel camp at Dogue Creek Marina that would include approximately 6.5 acres of recreational space for campers and RV owners. The camp would also include a support facility with an office, laundry facility, camper's lounge space, restrooms and showers, vending machine area, and parking. Approximately 50 pull-through RV camp sites would be constructed, including concrete vehicle and picnic pads, as well as water, sewer, and electric hook-ups. Rustic tent camp sites would also be constructed and include tables and grills, water and electrical hook-ups, and vehicle parking spaces. Paved vehicle circulation roads, walking paths, landscaping, street and site lighting, sewage lift stations, storm water management, utility upgrades, and area directional signage are also part of the Proposed Action.

Construction of the Proposed Action would displace a large number of dry slips. The current conceptual site layout is shown in Figure 3. The existing marina infrastructure, which includes piers and their associated wet slips, boat lift, two-lane boat ramp, and kayak launch with finger pier, would remain in place. The existing Building 1696 (approximately 11,000 square feet [SF] in size), located at 5465 Hudson Road, would be demolished and replaced with a 10-25 space paved parking lot. A new 3,000 SF camp support building would be built north of the new parking lot. Approximately 15 rustic tent camping spots would be apportioned on the unpaved peninsula in the southwestern portion of the Proposed Action area. RV spaces would be configured to allow pull-through access for full-sized rigs and access roads would provide for adequate maneuvering space in/out of individual spaces as well as into and out of the facility itself. Beautification of the shoreline through strategic plantings will add aesthetic appeal to this waterfront location, but no work to alter the shoreline through grading or adding armaments (such as riprap or bulkheads) is part of this Proposed Action, and no alterations to the marina infrastructure (e.g., in-water work) are part of this Proposed Action. Specific details regarding the final size of the camp support building, number of RV and camper spaces, and configuration of the roadways will be developed as the project moves through the design phases, to be initiated once full project funding is appropriated.

The Proposed Action is needed for the facility to provide additional space for eligible RVs and travelers to stay within Fort Belvoir and the NCR. Currently, there is insufficient space for the level of patronage received from both eligible customers assigned to or supported by Fort Belvoir and those visiting the area. As a result, prospective customers are forced to seek service from commercially operated facilities that are overcrowded during peak travel times, have higher cost, and are located an average of 45 minutes from Washington, DC. The existing RV park, located adjacent to Pohick Bay, offers 50 spaces, and an expansion project is under development to provide an additional 30 spaces.

2.1. Alternatives Considered

Several possible other locations on Fort Belvoir were identified for the Proposed Action but were eliminated from consideration.

An alternative site approximately 3 miles southwest of the Proposed Action site, located south of Warren Road and north of Williams Street, was considered. It was also previously considered for the travel camp expansion project but eliminated from consideration for this Proposed Action because of expenses associated with site development due to the potential for existing foundations remaining in place from previous land use. This alternative also contains limited developable space due to a resource protection area for an unnamed perennial stream to the south and east of the site. In addition, this site is near the Tompkins Basin Visitor Center, which would cause negative impacts to aesthetics for the Visitor Center.

Another alternative site, located north of Warren Road, was eliminated from consideration due to environmental constraints. The area is surrounded by steep topography and slopes with challenging implications for controlling stormwater runoff, as there is the potential for severe erosion and sediment control issues and extensive grading would likely be required. It also has an adjacent resource protection area that limits the developable property.

A third alternative considered but dismissed from further consideration was the conversion of the existing Castle Park, adjacent to Gunston Cove and within the Tompkins Basin MWR complex at Warren and Johnston Roads. The Tompkins Basin area supports a fishing pier, dog park, indoor archery range, and outdoor equipment rental. A National Register of Historic Places eligible site (Archaeological Site 44FX1328) is located in this area, so this alternative was quickly dismissed.

3.0 IMPACTS AND MITIGATION MEASURES

3.1 Floodplains

The travel camp would include construction of concrete pads for vehicles and picnic areas at the RV camp sites, as well as the construction of a new 3,000 SF camp support building to replace the existing Building 1696 (to be demolished). Paved vehicle circulation roads, walking paths, landscaping, storm water management and erosion and sediment control design are also part of the Proposed Action. The Proposed Action would include stormwater channels, stormwater lines from adjacent roadways drainage, and culverts draining into Dogue Creek. Land use in the Proposed Action area would remain the same and areas outside of the proposed concrete pads, roads and walking paths would continue to be maintained as mowed grass.

The Proposed Action would require up to a maximum of approximately 7.5 acres of permanent impacts to the 100-year floodplain of Dogue Creek (Figure 4). EO 11988

states that if the only practicable alternative requires siting in a floodplain, the agency shall, prior to acting, design or modify its action to minimize potential harm to or within the floodplain.

The Proposed Action area is bounded by the River Village neighborhood along its northeastern to eastern edges, and by Dogue Creek along its southern and western borders. A majority of the Proposed Action area lies within the floodplain, as shown in Figure 4, and the existing land uses and waterbody constrain the Army from shifting the Proposed Action outside of the floodplain.

3.2 Mitigation Measures

The natural features within the project site will be conserved to the maximum extent practicable. Landscaping using native vegetation along the waterfront and pathways would be added to beautify the shoreline.

Under the Proposed Action, the Army would implement best management practices (BMPs) and low- impact-development (LID) measures to reduce the potential for adverse impacts on the floodplain. BMPs and LID measures are incorporated into the Proposed Action to avoid or minimize impacts on floodplains and are collectively described, as follows:

- Adhere to appropriate permits (or letters of exemption) from the VADEQ and USACE to comply with Sections 404/401 of the Clean Water Act and comply with all BMPs established throughout this consultation process.
- Obtain a *General Virginia Erosion and Sediment Control Program Permit for Discharges of Stormwater from Construction Activities* to manage stormwater associated with construction of the Proposed Action. Fort Belvoir would prepare and adhere to a state-approved Erosion and Sediment Control Plan and submit a Notice of Intent to meet the requirements of the federal National Pollutant Discharge Elimination System program. Fort Belvoir would also manage stormwater discharges and maintain water quality through compliance with existing total maximum daily loads.
- Native plant species are to be used in any sediment and erosion control efforts (including BMPs) that incorporate plantings.
- Incorporate, as required by Section 438 of the Energy Independence and Security Act, green infrastructure or LID measures to maintain the pre-development hydrology of the project site to the maximum extent technically feasible during operation, minimizing any change in the rate, volume, and temperature of stormwater discharging to off-site areas.
- Incorporate, as required by EO 13508, *Chesapeake Bay Protection and Restoration*, stormwater control BMPs to manage and reduce pollution flowing from the project site into the Chesapeake Bay and its tributaries.
- Demarcate the construction limits of disturbance (LOD) in the field to prevent encroachment on unpermitted surface water resources.

- Establish construction staging areas at least 100 feet away from surface water resources.
- If excavating below the groundwater table, incorporate measures that minimize potential impacts to local shallow groundwater, including dewatering these areas, preventing discharge of any water potentially contaminated during the construction/demolition process, and restoring sites to natural subsurface conditions prior to construction.

The above steps would be implemented as "mitigation by design" and are a proactive means of minimizing environmental impacts. Taken together, these and other yet to be determined BMPs and mitigation measures would avoid or minimize the loss of and impacts on floodplains within the Proposed Action location. These measures represent all practicable measures to minimize harm to floodplains.

The No Action Alternative is being carried forward in the EA in accordance with National Environmental Policy Act (NEPA) requirements to provide a baseline against which impacts of the Proposed Action could be measured. Under the No Action Alternative, Fort Belvoir would not construct this travel camp, resulting in a continued lack of adequate recreational space for eligible customers and visitors to the Northern Virginia area. Fort Belvoir customers and supporters would continue to use surrounding, more expensive facilities with longer commutes to Washington, DC. The morale boosting benefits of building the travel camp would not be gained by soldiers, family members, and DoD Civilians. Because the No Action Alternative does not meet the purpose and need for the Proposed Action, the No Action Alternative is not "practicable" within the meaning of EO 11988.

4.0 FINDING OF NO PRACTICABLE ALTERNATIVE

During development of the Proposed Action, the Fort Belvoir Directorate of Public Works, Environmental Division and MWR will work proactively to ensure the purpose and need of the Proposed Action will be met while also avoiding as many potential impacts to floodplains as practicable. Due to operational requirements and site constraints, it was determined that complete avoidance of floodplains was not feasible; however, the Proposed Action will minimize potential impacts to the greatest degree practicable while also achieving the required results.

Accordingly, I find there is no practicable alternative to siting the proposed action entirely outside of floodplains; however, the Army will utilize all practicable measures to avoid and minimize impacts to the greatest extent practicable as design proceeds.

_____ _____

Date

Omar J. Jones IV
Lieutenant General, USA
Commanding

Attachments:

Figure 1. Fort Belvoir Location
Figure 2. Proposed Action Area
Figure 3: Conceptual Site Layout
Figure 4: Floodplain Map

Attachments

Figure 1: Fort Belvoir Location

Figure 2: Proposed Action Area

Figure 3: Conceptual Design Layout

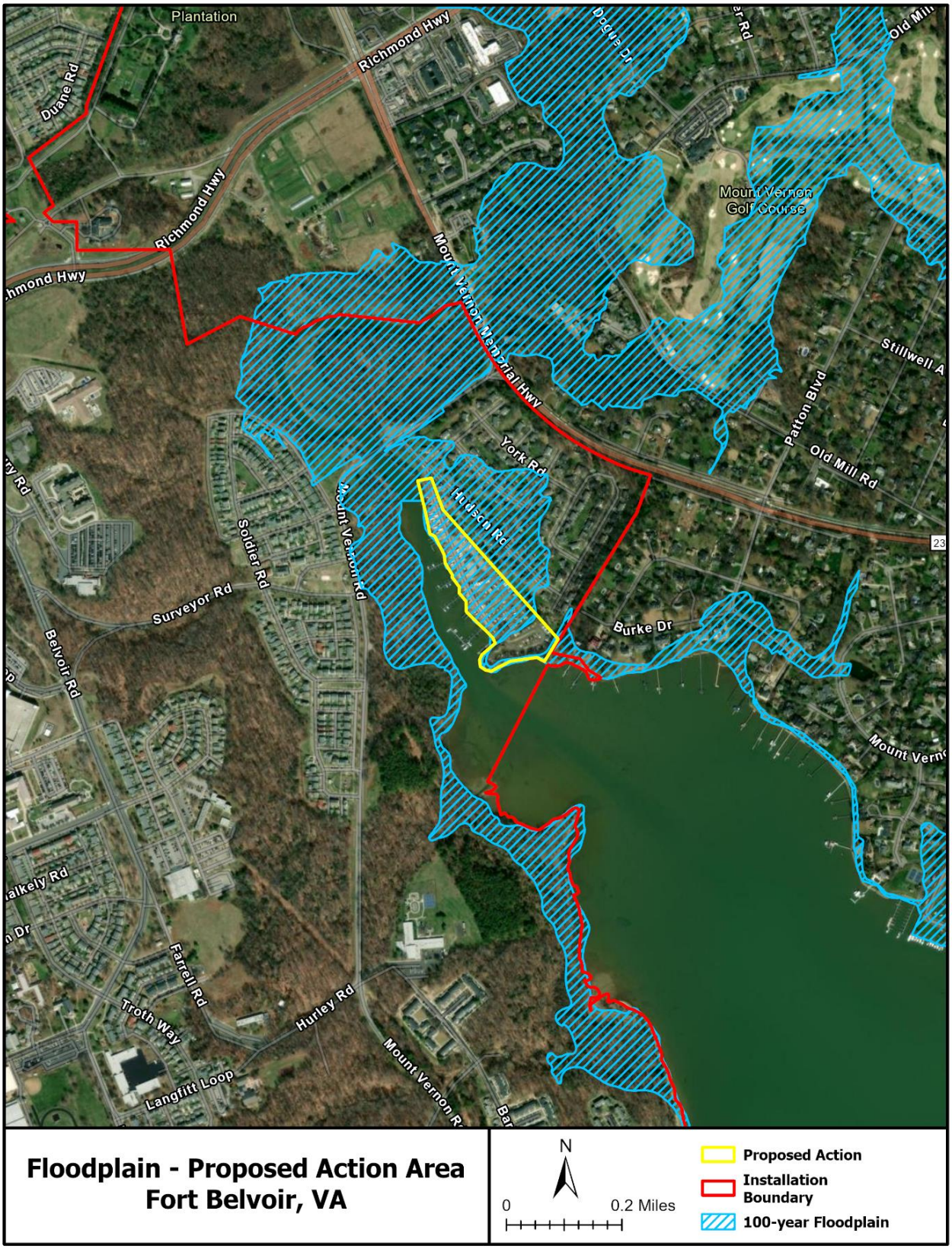

Figure 4: Floodplain Map

APPENDIX E – INFORMATION FOR PLANNING AND CONSULTATION (IPaC) REPORT

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United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694

In Reply Refer To: 03/14/2025 18:27:31 UTC
Project code: 2025-0069359
Project Name: Dogue Creek Marina Travel Camp

Federal Nexus: yes
Federal Action Agency (if applicable): Army Corps of Engineers

Subject: Technical assistance for 'Dogue Creek Marina Travel Camp'

Dear Connie Ramsey:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on March 14, 2025, for 'Dogue Creek Marina Travel Camp' (here forward, Project). This project has been assigned Project Code 2025-0069359 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project. **Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (Dkey), invalidates this letter.**

Determination for the Northern Long-Eared Bat and Tricolored Bat

Based on your IPaC submission and a standing analysis completed by the Service, you determined the proposed Project will have the following effect determinations:

Species	Listing Status	Determination
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	May affect
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	May affect

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may cause prohibited take of the species listed above.

Conclusion

Consultation with the Service is not complete. Further consultation or coordination with the Service is necessary for those species or designated critical habitats with a determination of "May Affect." A "May Affect" determination in this key indicates that the project, as entered, is not consistent with the questions in the key. Not all projects that reach a "May Affect" determination are anticipated to result in adverse impacts to listed species. These projects may result in a "No Effect", "May Affect, Not Likely to Adversely Affect", or "May Affect, Likely to Adversely Affect" determination depending on the details of the project. Please contact our Virginia Ecological Services Field Office to discuss methods to avoid or minimize potential adverse effects to those species or designated critical habitats.

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate. Projects that receive a may affect determination for tricolored bat through the key, should contact the appropriate Ecological Services Field Office if they want to conference on this species.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Dogue Creek Marina Travel Camp

2. Description

The following description was provided for the project 'Dogue Creek Marina Travel Camp':

> Construct a 6.5-acre travel camp facility on the existing Dogue Creek Marina facility.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.70700975,-77.12979664633298,14z

DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of “may affect” for a least one species covered by this determination key.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

4. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   Yes

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

10. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

11. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    No

12. Will the action cause effects to a bridge?

    Note: Covered bridges should be considered as bridges in this question.

    No

13. Will the action result in effects to a culvert or tunnel at any time of year?

    No

14. Are trees present within 1000 feet of the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

15. Does the action include the intentional exclusion of bats from a building or structure?

    Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    No

16. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

17. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

18. Will the action include or cause any construction or other activity that is reasonably certain to increase average daily traffic permanently or temporarily on one or more existing roads?

    Note: For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    Yes

19. Will the increased vehicle traffic occur on any road that lies between any two areas of contiguous forest that are each greater than or equal to 10 acres in extent and are separated by less than 1,000 feet? Bats may cross a road by flying between forest patches that are up to 1,000 feet apart.

    Note: "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forested area if the forested patches, added together, comprise at least 10 acres.

    No

20. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    Note: For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    No

21. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

22. Will the action include drilling or blasting?

    No

23. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

    No

24. Will the proposed action involve the use of herbicides or other pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

    Yes

25. Will the action include or result in herbicide use that may affect suitable summer habitat for the northern long-eared bat or tricolored bat?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

26. Will the action include or cause the application or drift of pesticides (e.g., fungicides, insecticides, or rodenticides) into forested areas that are suitable summer habitat for the northern long-eared bat or tricolored bat?

    Answer "Yes" if the application may result in transport (e.g., in water) or aerial drift of the pesticide into forested areas that are suitable summer habitat for the northern long-eared bat or tricolored bat.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

27. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

    Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

28. Does the action area intersect the northern long-eared bat species list area?

    Automatically answered
    Yes

29. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

    Automatically answered
    No

30. [Semantic] Is the action area located within 150 feet of a documented northern long-eared bat roost site?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

31. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    If unsure, answer "Yes."

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

32. Has a presence/probable absence summer bat survey targeting the northern long-eared bat following the Service's Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines been conducted within the project area?

    No

33. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

34. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

35. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities?
    (If unsure, answer ""Yes."")

    Note: If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (Tillandsia usneoides), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see Appendix A in the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    Yes

36. Do you have any documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Connie Ramsey
Address: 2 Hopkins Plaza
City: Baltimore
State: MD
Zip: 21201
Email connie.l.ramsey@usace.army.mil
Phone: 4109627783

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DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT BELVOIR
9820 FLAGLER ROAD, SUITE 213
FORT BELVOIR, VIRGINIA 22060-5928

Directorate of Public Works

Mr. Troy Andersen
Field Supervisor
U.S. Fish and Wildlife Service
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061

Dear Mr. Andersen,

The purpose of this letter is to initiate consultation with your office under Section 7 of the Endangered Species Act (ESA) for a proposed undertaking by the Directorate of Family, Morale, Welfare, and Recreation to construct fifty (50) RV camp sites with full utility hookups, fifteen (15) rustic camp sites, a camping support facility with laundry, restrooms, showers, and camper's lounge space, and associated vehicle circulation roads and walkways at Fort Belvoir, in Fairfax County, Virginia (Enclosure 1). The project would be built within an active marina, replacing approximately 6.5 acres of dry marina spaces.

The purpose of the project is to provide adequate outdoor camping opportunities for the Fort Belvoir/National Capital Region customers. This project will provide Fort Belvoir customers space for camp sites in the Northern Virginia region, with convenient access to Washington D.C. and affordable prices compared to commercialized campsites. The Proposed Action is located on previously disturbed land within the existing Dogue Creek Marina. The project will also require new electrical, water, gas, sanitary sewer lines; lighting; parking; sidewalks; storm drainage; landscaping; and other site improvements. No shoreline or in-water work is proposed, with the exception of some aesthetic trees to be places along the shoreline.

Fort Belvoir completed the species-specific effect determination key (D-key) for the endangered Northern Long-Eared Bat (Myotis septentrionalis) (NLEB) using the Information for Planning and Consultation (IPaC) online platform and available project information. The D-key provided a determination that the project May Affect (MA) the NLEB.

There is also potential occurrence of the tricolored bat (*Perimyotis subflavus*), which is currently proposed for listing as endangered. The D-key results indicated the project may affect the tricolored bat. To minimize the potential for adverse effects to these bat

species, time of year restrictions found in the NLEB D-key would be employed for any clearing associated with establishing the camp facilities, although this would be limited to clearing only as necessary to remove hazard trees within the marina facility.

The species list also noted the potential presence of the candidate species, Monarch butterfly (*Danaus plexippus*). We request any additional information your office may have on the presence of federally protected animal and plant species listed by the Fish and Wildlife Coordination Act and Section 7 of the Endangered Species Act for the project area shown in yellow on the enclosed site location maps.

The technical points of contact are Mr. Brice Bartley, Acting Chief, Conservation Branch, Environmental Division, 703-806-0049, brice.c.bartley.civ@army.mil or Mr. Terrel Christie, terrel.w.christie.civ@army.mil.

Please provide written comments within 30 days from the date of this letter to Directorate of Public Works, 9430 Jackson Loop, Fort Belvoir, Virginia 22060-5116.

Point of contact is Mr. Yun Heo, Director of Public Works, 703-806-3017 or Yun.heo.civ@army.mil.

Sincerely,

DAVID J. STEWART
COL, U.S. Army
Commanding

Enclosures

Figure 1: Project Location Map

Figure 2: Dogue Creek Marina Travel Camp EA Study Area

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694

In Reply Refer To: 03/14/2025 18:04:10 UTC
Project Code: 2025-0069359
Project Name: Dogue Creek Marina Travel Camp

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Any activity proposed on National Wildlife Refuge lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Project Code in the header of this

letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
(804) 693-6694

PROJECT SUMMARY

Project Code: 2025-0069359
Project Name: Dogue Creek Marina Travel Camp
Project Type: Military Development
Project Description: Construct a 6.5-acre travel camp facility on the existing Dogue Creek Marina facility.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@38.70700975,-77.12979664633298,14z

Counties: Fairfax County, Virginia

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

---

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.

3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper

Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

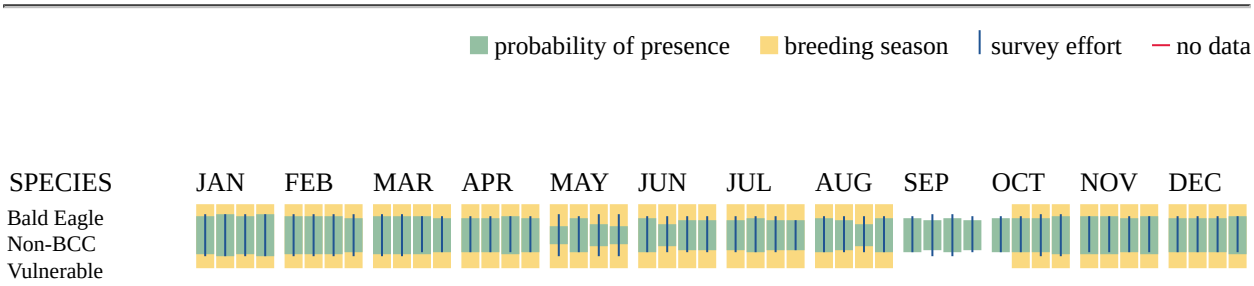
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service). The incidental take of migratory

birds is the injury or death of birds that results from, but is not the purpose, of an activity. The Service interprets the MBTA to prohibit incidental take.

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Blue-winged Warbler *Vermivora cyanoptera* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9509	Breeds May 1 to Jun 30
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Canada Warbler *Cardellina canadensis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9643	Breeds May 20 to Aug 10
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Grasshopper Sparrow *Ammodramus savannarum perpallidus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20
Kentucky Warbler *Geothlypis formosa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9443	Breeds Apr 20 to Aug 20

NAME	BREEDING SEASON
King Rail *Rallus elegans* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8936	Breeds May 1 to Sep 5
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Prairie Warbler *Setophaga discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9513	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9439	Breeds Apr 1 to Jul 31
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Rusty Blackbird *Euphagus carolinus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9478	Breeds elsewhere
Scarlet Tanager *Piranga olivacea* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11967	Breeds May 10 to Aug 10
Semipalmated Sandpiper *Calidris pusilla* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9603	Breeds elsewhere
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere

NAME	BREEDING SEASON
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

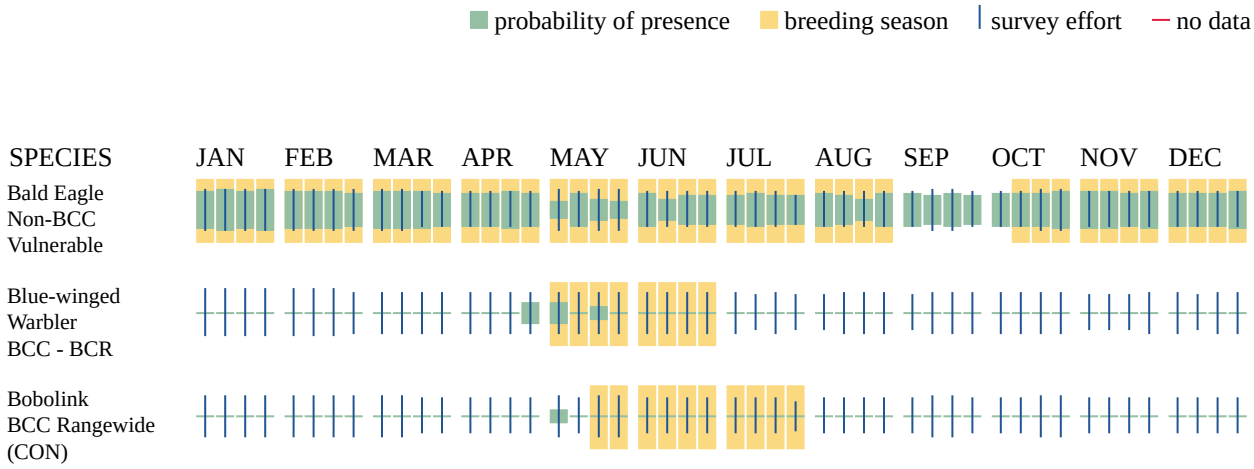
Probability of Presence (■)

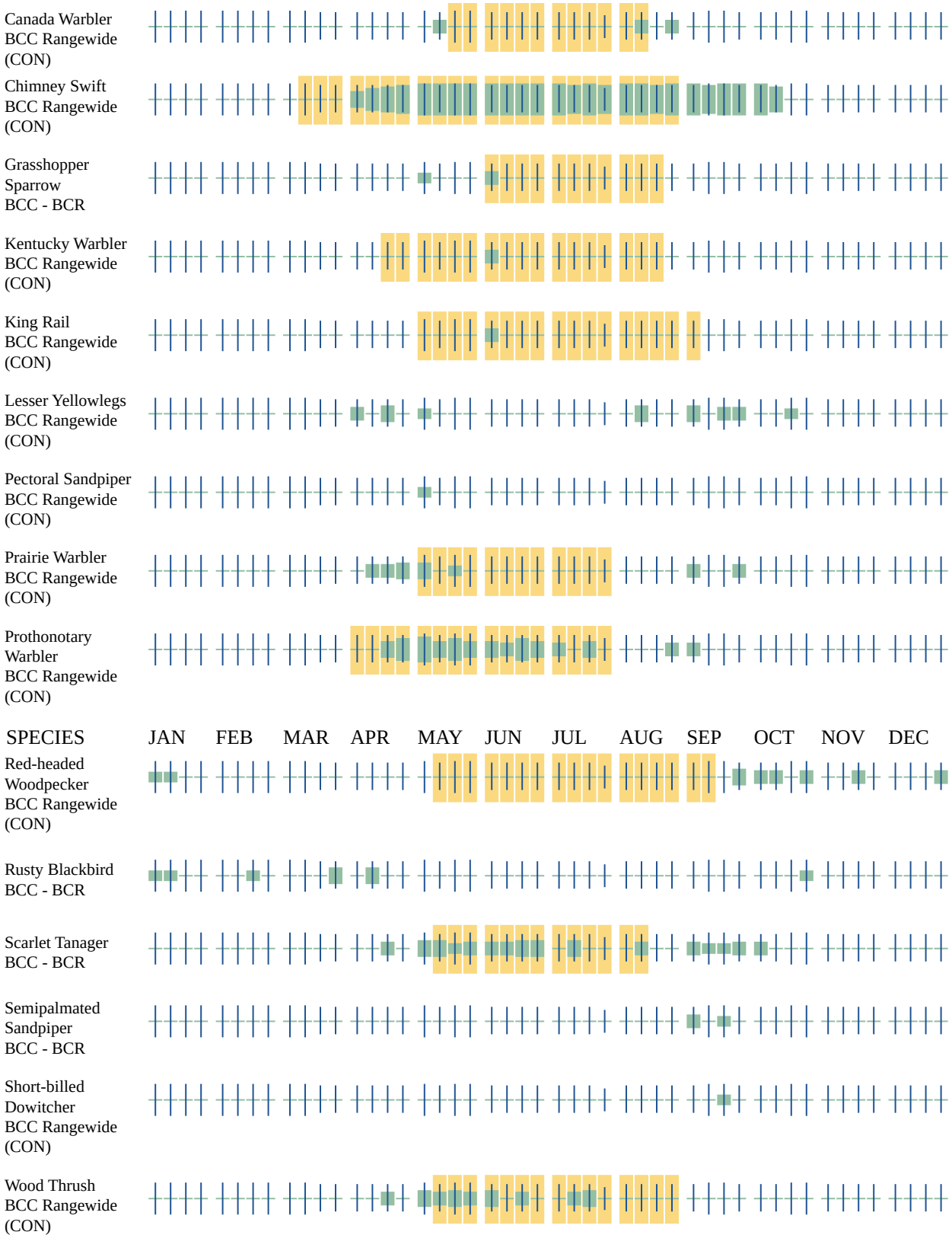
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.




Canada Warbler BCC Rangewide (CON)
Chimney Swift BCC Rangewide (CON)
Grasshopper Sparrow BCC - BCR
Kentucky Warbler BCC Rangewide (CON)
King Rail BCC Rangewide (CON)
Lesser Yellowlegs BCC Rangewide (CON)
Pectoral Sandpiper BCC Rangewide (CON)
Prairie Warbler BCC Rangewide (CON)
Prothonotary Warbler BCC Rangewide (CON)
SPECIES
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Red-headed Woodpecker BCC Rangewide (CON)
Rusty Blackbird BCC - BCR
Scarlet Tanager BCC - BCR
Semipalmated Sandpiper BCC - BCR
Short-billed Dowitcher BCC Rangewide (CON)
Wood Thrush BCC Rangewide (CON)

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

IPAC USER CONTACT INFORMATION

Agency: Army Corps of Engineers
Name: Connie Ramsey
Address: 2 Hopkins Plaza
City: Baltimore
State: MD
Zip: 21201
Email connie.l.ramsey@usace.army.mil
Phone: 4109627783

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Virginia Field Office
6669 Short Lane
Gloucester, VA 23061

Date:

Self-Certification Letter

Project Name: Dogue Creek Travel Camp

Dear Federal Action Agency:

Thank you for using the U.S. Fish and Wildlife Service (Service) Virginia Ecological Services online project review process. By submitting this letter, in conjunction with your project review package to our office for review, you are certifying that you have completed the online project review process for the project named above in accordance with all instructions provided, using the best available information to reach your determinations. From the date of receipt, our office has 60 days (50 CFR § 402.13(c)(2)) to review your project package. If we do not concur with the Section 7 determination(s) provided or if we have any questions/concerns regarding the information provided, you will be contacted. If you are not contacted during the 60-day review period, this letter and your project review package complete the review of your project in accordance with the Endangered Species Act (16 USC 1536), as amended (ESA). This letter also provides information for your project review under the National Environmental Policy Act of 1969 (P.L. 91-190, 42 USC 4321-4347, 83 Stat. 852), as amended. A copy of this letter and the project review package must be submitted to this office by the Federal action agency or their officially designated non-federal representative (per 50 CFR 402.08) for this self-certification letter to be valid. This letter and the project review package will be maintained in our records.

The ESA Section 7 Determination Table in the enclosed project review package summarizes your ESA analyses and determinations. These analyses resulted in a “no effect” and/or a “may affect, not likely to adversely affect” determination for proposed/listed species and/or proposed/designated critical habitat.

The use of the online project review process in strict accordance with the instructions provided as documented in the enclosed project review package resulted in reaching the appropriate determinations. Therefore, we concur with the not likely to adversely affect determination(s) for proposed/listed species and proposed/designated critical habitat provided in the ESA Section 7 Determination Table.

Should project plans change, surveys expire, or information on the distribution or status of proposed/listed species and/or proposed/designated critical habitat become available/change, this letter is no longer valid and you must submit an updated project package.

Note that under 50 CFR 402.12(e) of the regulations implementing Section 7 of the ESA, the accuracy of official species lists should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information.

Information about the online project review process including instructions and use, species information, and other information regarding project reviews within Virginia is available on our website (https://www.fws.gov/office/virginia-ecological-services/virginia-field-office-online-review-process). If you have any questions, please contact Troy Andersen of this office at (804) 728-0695.

Sincerely,

Troy Andersen
Acting Field Supervisor
Virginia Ecological Services

Enclosures - project review package

Endangered Species Act (ESA) Section 7 Determination Table

Project Name: Dogue Creek Travel Camp

Date: 05/15/2025

Consultation Code:

Species / Resource Name *Insert name of species or resource as listed on Official Species List.*	**Habitat/Species Presence in Action Area** *Indicate if suitable habitat and species are present in the Action Area (see examples in Step 5).*	**Sources of Info** *Explain what info suitable habitat/species presence is based on.*	**ESA Section 7 Determination** *Using reasoning and decision tables in Step 5, select determination for each species (e.g. no effect, not likely to adversely affect, or likely to adversely affect).*	**Project Elements that Support Determination** *Explain which project elements may impact the habitat or individuals of each species and any Avoidance and Minimization Measures being implemented.*
Northern Long-eared Bat Myotis septentrionalis	VAFO CH Map Tool- No critical habitat present. No suitable present (caves, mines, dams, large shaggy trees, or large abandoned buildings).	VAFO CH Map Tool, VDWR	Not likely to adversely effect	At most 0.5 acres of vegetated area would be removed. This is primarily small trees (under 6dbh). These are not shaggy trees that can be roosted in. No caves in the LOD TOYR October 1 – March 31 would be followed.
Tricolored Bat Perimyotis subflavus	VAFO CH Map Tool- No critical habitat present. No suitable present (caves, mines, dams, or large shaggy trees).	VAFO CH Map Tool, VDWR,	Not likely to adversely effect	At most 0.5 acres of vegetated area would be removed. This is primarily small trees (under 6dbh). No caves in the LOD. These are not shaggy trees that can be roosted in. TOYR October 1 – March 31 would be followed.
Monarch Butterfly Danaus plexippus	VAFO CH Map Tool- no critical habitat present. No suitable habitat-primarily developed asphalt with mowed grass areas)	VAFO CH Map Tool, VDWR	Not likely to adversely effect	No open field pollinator habitat exists on the site now.

From: Virginia Field Office, FW5
To: Joyal, Lauren E CIV USARMY CENAB (USA)
Cc: Ramsey, Connie L CIV USARMY CENAB (USA); Christie, Terrel W CIV USARMY ID-SUSTAINMENT (USA)
Subject: [Non-DoD Source] Re: [EXTERNAL] VA USFWS Dogue Creek Marina EA Consultation Letter
Date: Tuesday, May 20, 2025 12:34:16 PM

Hi Lauren,

Thank you for sending those documents. The summer occupancy TOYR is from April 1 - September 30. We recommend avoiding tree removal and trimming during this TOYR.

Additionally, I see that it was responded on the DKey that the action will include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season. If you anticipate that the project will include activities that will be loud enough to startle roosting bats in adjacent suitable habitat, then we recommend that you avoid these activities during the pup season TOYR from May 15 - July 31.

If the project can adhere to these TOYRs, please add this information to the ESA Section 7 Determination Table and submit the revised document. Please also add the date to the self-certification letter. Let me know if you have any questions.

Best,
Jackie

From: Joyal, Lauren E CIV USARMY CENAB (USA) <Lauren.E.Joyal@usace.army.mil>
Sent: Monday, May 19, 2025 9:33 AM
To: Virginia Field Office, FW5 <virginiafieldoffice@fws.gov>
Cc: Ramsey, Connie L CIV USARMY CENAB (USA) <Connie.L.Ramsey@usace.army.mil>; Christie, Terrel W CIV USARMY ID-SUSTAINMENT (USA) <terrel.w.christie.civ@army.mil>
Subject: RE: [EXTERNAL] VA USFWS Dogue Creek Marina EA Consultation Letter

Hello,

Please find the attached Self Certification Letter and Section 7 Determination table with a NLAA for all species.

Thanks,
Lauren

From: Virginia Field Office, FW5 <virginiafieldoffice@fws.gov>
Sent: Tuesday, April 8, 2025 2:08 PM
To: Joyal, Lauren E CIV USARMY CENAB (USA) <Lauren.E.Joyal@usace.army.mil>
Cc: Ramsey, Connie L CIV USARMY CENAB (USA) <Connie.L.Ramsey@usace.army.mil>; Christie, Terrel W CIV USARMY ID-SUSTAINMENT (USA) <terrel.w.christie.civ@army.mil>
Subject: [Non-DoD Source] Re: [EXTERNAL] VA USFWS Dogue Creek Marina EA Consultation Letter

Hi Lauren,

Thank you for notifying our office about this project. For a complete project package, please also submit an ESA Section 7 Determination Table and either a self-certification letter or a review request letter based on your effect determinations. These documents can be found on our online review process: https://www.fws.gov/office/virginia-ecological-services/virginia-field-office-online-review-process

Let me know if you have any questions. Thank you!

Best,
Jackie

From: Joyal, Lauren E CIV USARMY CENAB (USA) <Lauren.E.Joyal@usace.army.mil>
Sent: Monday, April 7, 2025 2:22 PM
To: Virginia Field Office, FW5 <virginiafieldoffice@fws.gov>
Cc: Ramsey, Connie L CIV USARMY CENAB (USA) <Connie.L.Ramsey@usace.army.mil>; Christie, Terrel W CIV USARMY ID-SUSTAINMENT (USA) <terrel.w.christie.civ@army.mil>
Subject: [EXTERNAL] VA USFWS Dogue Creek Marina EA Consultation Letter

Hello,

I am writing to begin coordination for the Proposed Dogue Creek Marina EA on behalf of Fort Belvoir. This input will be considered and incorporated into the preparation of the NEPA document. I have attached an official species list from the IPaC and a D-Key for the Tricolored and NLEB with a “may affect determination” for both bats. The monarch butterfly is listed in the official species list; however, the Proposed Action is almost entirely within a developed area and currently does not house any of the species that host monarch butterflies.

Thank you for your time and input. We kindly request your response within 30 days of this receipt. Please let me know if you have any questions.

Thanks,
Lauren

APPENDIX F – AIR QUALITY RECORD OF NON-APPLICABILITY

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FORT BELVOIR DOGUE CREEK MARINA TRAVEL CAMP
RECORD OF NON-APPLICABILITY (RONA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform a net change in emissions analysis to assess the potential air quality impact/s associated with the action. The analysis was performed in accordance with the Air Force Manual 32-7002, *Environmental Compliance and Pollution Prevention*; the *Environmental Impact Analysis Process* (EIAP, 32 CFR 989); the *General Conformity Rule* (GCR, 40 CFR 93 Subpart B); and the *USAF Air Quality Environmental Impact Analysis Process (EIAP) Guide*. This report provides a summary of the ACAM analysis.

Report generated with ACAM version: 5.0.23a

a. Action Location:

Base: Fort Belvoir
State: Virginia
County(s): Fairfax
Regulatory Area(s): Washington, DC-MD-VA

b. Action Title: Dogue Creek Marina Travel Camp

c. Projected Action Start Date: 1 / 2026

d. Action Description:

The Proposed Action involves construction and operation of a travel camp that would result in approximately 6.5-acres of recreational space for campers and RV owners. The camp would include a support facility with an office, laundry section, camper's lounge space, restrooms and showers, vending machine space, and parking. Approximately 50 pull-through RV camp sites would be constructed, including concrete vehicle and picnic pads, and water, sewer, and electric hook-ups. Rustic tent camp sites would also be constructed and include tables and grills, water and electrical hook-ups, and vehicle parking spaces. Paved vehicle circulation roads, walking paths, landscaping, street and site lighting, sewage lift stations, storm water management, utility upgrades, and area directional signage would also be included.

The Proposed Action area is located within the existing Dogue Creek Marina facility and construction would displace a large number of the dry slips. The existing marina infrastructure, including piers (and their associated wet slips), boat lift, two-lane boat ramp, and kayak launch with finger pier, would remain in place. The existing approximately 11,000 square foot (SF) Building 1696, located in the vicinity of where Delaware Road forks, would be demolished and replaced with an approximately 10-25 space paved parking lot located south of the new 3,000 SF camp support building. Approximately 15 rustic tent camping spots would be apportioned on the unpaved peninsula in the southwestern portion of the Proposed Action area. RV spaces would be configured to allow pull-through access for full-sized rigs and access roads would provide for adequate maneuvering space in/out of individual spaces as well as into and out of the facility itself. Beautification of the shoreline through strategic plantings will add aesthetic appeal to this waterfront location, but no work to alter the shoreline through grading or adding armaments (such as riprap or bulkheads) is part of this Proposed Action, and no alterations to the marina infrastructure (e.g., in-water work) are part of this Proposed Action. Specific details regarding the final size of the camp support building, number of RV and camper spaces, and configuration of the roadways will be developed as the project moves through the design phases, to be initiated once full project funding is appropriated.

e. Action Purpose and Need:

The purpose of this project is to upgrade, construct, and operate an approximately 6.5-acre travel camp at Fort Belvoir on the site of the current Dogue Creek Marina to be managed by the Installation Management Command's Morale Welfare and Recreation (MWR) Directorate. The Proposed Action would provide needed space for customers at Fort Belvoir in a highly desirable waterfront area with access to the Potomac River.

The need for the facility is to provide additional space for eligible RVs and travelers to stay within the Fort Belvoir/NCR. Currently, there is insufficient space for the level of patronage received from both eligible

customers assigned to or supported by Fort Belvoir and those visiting the area. Currently, prospective customers are forced to seek service from commercially operated facilities that are overcrowded during peak travel times, have higher cost, and are located an average of 45 minutes from Washington, DC. The existing RV park, located adjacent to Pohick Bay, offers fifty (50) spaces, and an expansion project is under development to provide an additional 50 spaces.

2. Analysis: Total reasonably foreseeable net change in direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" (highest annual emissions) and "steady state" (no net gain/loss in emission stabilized and the action is fully implemented) emissions. General Conformity under the Clean Air Act, Section 1.76 has been evaluated for the action described above according to the requirements of 40 CFR 93, Subpart B.

All emissions estimates were derived from various sources using the methods, algorithms, and emission factors from the most current *Air Emissions Guide for Air Force Stationary Sources*, *Air Emissions Guide for Air Force Mobile Sources*, and/or *Air Emissions Guide for Air Force Transitory Sources*. For greater details of this analysis, refer to the Detail ACAM Report included in Attachment 1. Additionally, for informative purposes, greenhouse gas emissions (GHG) and the social cost of the GHG emissions estimated for this Proposed Action are included in Attachment 2.

____ applicable
__X__ not applicable

FORT BELVOIR DOGUE CREEK MARINA TRAVEL CAMP
RECORD OF NON-APPLICABILITY (RONA)

Conformity Analysis Summary:

2026

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Washington, DC-MD-VA			
VOC	0.078	50	No
NOx	0.653	100	No
CO	0.888		
SOx	0.001		
PM 10	5.844		
PM 2.5	0.025		
Pb	0.000		
NH3	0.001		

2027

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Washington, DC-MD-VA			
VOC	0.083	50	No
NOx	0.227	100	No
CO	1.151		
SOx	0.001		
PM 10	0.009		
PM 2.5	0.008		
Pb	0.000		
NH3	0.007		

2028 - (Steady State)

Pollutant	Action Emissions (ton/yr)	GENERAL CONFORMITY	
		Threshold (ton/yr)	Exceedance (Yes or No)
Washington, DC-MD-VA			
VOC	0.170	50	No
NOx	0.098	100	No
CO	2.508		
SOx	0.002		
PM 10	0.004		
PM 2.5	0.004		
Pb	0.000		
NH3	0.020		

The Criteria Pollutants (or their precursors) with a General Conformity threshold listed in the table above are pollutants within one or more designated nonattainment or maintenance area/s for the associated National Ambient Air Quality Standard (NAAQS). These pollutants are driving this GCR Applicability Analysis. Pollutants exceeding the GCR thresholds must be further evaluated potentially through a GCR Determination.

The pollutants without a General Conformity threshold are pollutants only within areas designated attainment for the associated NAAQS. These pollutants have an insignificance indicator for VOC, NOx, CO, SOx, PM 10, PM 2.5, and NH3 of 250 ton/yr (Prevention of Significant Deterioration major source threshold) and 25 ton/yr for Pb (GCR de minimis value). Pollutants below their insignificance indicators are at rates so insignificant that they will not cause or contribute to an exceedance of one or more NAAQSs. These indicators do not define a significant impact;

however, they do provide a threshold to identify actions that are insignificant. Refer to the *Level II, Air Quality Quantitative Assessment Insignificance Indicators* for further details.

None of the annual net change in estimated emissions associated with this action are above the GCR threshold values established at 40 CFR 93.153 (b); therefore, the proposed Action has an insignificant impact on Air Quality and a General Conformity Determination is not applicable.

Name, Title **Date**

FORT BELVOIR DOGUE CREEK MARINA TRAVEL CAMP
RECORD OF NON-APPLICABILITY (RONA)

Attachments

Attachment 1 – Detail ACAM Report

Attachment 2 – Greenhouse Gas Emissions and Social Cost Report

ATTACHMENT 1
DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

1. General Information

- Action Location
Base: Fort Belvoir
State: Virginia
County(s): Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Action Title: Dogue Creek Marina Travel Camp

- Projected Action Start Date: 1 / 2026

- Activity List:

Activity Title	
Construction / Demolition	Demolition of Building 1696
Construction / Demolition	Creation of 10-25 Spaces - Paved parking lot
Construction / Demolition	Construction of Camp Support Building / Welcome Center
Construction / Demolition	Site Grading - Travel Camp
Construction / Demolition	Water, Sewer, and Gas
Personnel	Civilian employees / Civilian users
Construction / Demolition	Parking for RV Slips
Construction / Demolition	Walkways
Construction / Demolition	Electric Services
Construction / Demolition	Paved Roadwork

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

- Activity Location
County: Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Demolition of Building 1696

- Activity Description:
The existing 11,000 square foot (SF) Building 1696, located in the vicinity of where Delaware Road forks, would be demolished and replaced with an approximately 10-25 space paved parking lot located south of the new 3,000 SF camp support building.

- Activity Start Date
Start Month: 1
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 1
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.001845
SO_x	0.000039
NO_x	0.017665
CO	0.024330

Pollutant	Total Emissions (TONs)
PM 10	0.028249
PM 2.5	0.000487
Pb	0.000000
NH_3	0.000062

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000169
N_2O	0.000033

Pollutant	Total Emissions (TONs)
CO_2	4.953723
CO_2e	4.967788

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000169
N_2O	0.000033

Pollutant	Total Emissions (TONs)
CO_2	4.953723
CO_2e	4.967788

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 0
Number of Days: 10

2.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 11000
Height of Building to be demolished (ft): 12

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Concrete/Industrial Saws Composite [HP: 33] [LF: 0.73]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.41257	0.00743	3.52633	4.31513	0.08509	0.07828
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.35280	0.00491	3.22260	2.72624	0.14205	0.13069
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Concrete/Industrial Saws Composite [HP: 33] [LF: 0.73]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02330	0.00466	574.35707	576.32812
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02160	0.00432	532.54993	534.37751
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**NH_3**
LDGV	0.17629	0.00195	0.08955	2.95708	0.00397	0.00351	0.02332
LDGT	0.18352	0.00254	0.14910	3.25659	0.00536	0.00474	0.02507
HDGV	0.74048	0.00601	0.72832	12.29440	0.02207	0.01953	0.05087
LDDV	0.06612	0.00098	0.06901	2.77248	0.00250	0.00230	0.00820
LDDT	0.06461	0.00116	0.09938	1.99411	0.00313	0.00288	0.00858
HDDV	0.09539	0.00409	2.19554	1.45330	0.03392	0.03121	0.03218
MC	2.40935	0.00259	0.66742	12.25997	0.02286	0.02022	0.05495

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	**N_2O**	**CO_2**	**CO_2e**
LDGV	0.01229	0.00442	292.95562	294.57715
LDGT	0.01389	0.00641	382.32732	384.58223
HDGV	0.05910	0.02689	904.49480	913.97497
LDDV	0.03831	0.00066	291.77518	292.92945
LDDT	0.03134	0.00096	348.07179	349.14153
HDDV	0.02602	0.00304	1220.56430	1222.11928
MC	0.11001	0.00285	390.41003	394.00938

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

- Activity Location
County: Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Creation of 10-25 Spaces - Paved parking lot

- Activity Description:
The existing 11,000 square foot (SF) Building 1696, located in the vicinity of where Delaware Road forks, would be demolished and replaced with an approximately 10-25 space paved parking lot located south of the new 3,000 SF camp support building.

While the original building is 11,000 SF, a 10-25 space paved parking lot would only require approximately 3,500 SF.

- Activity Start Date
Start Month: 3
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 4
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.002111
SO_x	0.000034
NO_x	0.015391
CO	0.023263

Pollutant	Total Emissions (TONs)
PM 10	0.000647
PM 2.5	0.000595
Pb	0.000000
NH_3	0.000034

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000138
N_2O	0.000031

Pollutant	Total Emissions (TONs)
CO_2	3.448587
CO_2e	3.461402

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000138
N_2O	0.000031

Pollutant	Total Emissions (TONs)
CO_2	3.448587
CO_2e	3.461402

3.1 Paving Phase

3.1.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 4
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 0
Number of Days: 10

3.1.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 3500

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day

Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.1.3 Paving Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.55280	0.00854	4.19778	3.25481	0.16332	0.15025
Pavers Composite [HP: 81] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.23717	0.00486	2.53335	3.43109	0.12904	0.11872
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.54202	0.00541	3.61396	4.09268	0.15387	0.14156
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02313	0.00463	570.16326	572.11992
Pavers Composite [HP: 81] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02133	0.00427	525.80405	527.60847
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	586.91372	588.92786
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.17629	0.00195	0.08955	2.95708	0.00397	0.00351	0.02332
LDGT	0.18352	0.00254	0.14910	3.25659	0.00536	0.00474	0.02507

HDGV	0.74048	0.00601	0.72832	12.29440	0.02207	0.01953	0.05087
LDDV	0.06612	0.00098	0.06901	2.77248	0.00250	0.00230	0.00820
LDDT	0.06461	0.00116	0.09938	1.99411	0.00313	0.00288	0.00858
HDDV	0.09539	0.00409	2.19554	1.45330	0.03392	0.03121	0.03218
MC	2.40935	0.00259	0.66742	12.25997	0.02286	0.02022	0.05495

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01229	0.00442	292.95562	294.57715
LDGT	0.01389	0.00641	382.32732	384.58223
HDGV	0.05910	0.02689	904.49480	913.97497
LDDV	0.03831	0.00066	291.77518	292.92945
LDDT	0.03134	0.00096	348.07179	349.14153
HDDV	0.02602	0.00304	1220.56430	1222.11928
MC	0.11001	0.00285	390.41003	394.00938

3.1.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

- Activity Location
County: Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Construction of Camp Support Building / Welcome Center

- Activity Description:
The new camp support building / welcome center area is anticipated to be approximately 3,000 SF and will be located north of the new 10-25 space paved parking lot.

Assumptions: Height of new camp support building unknown. Most camp support buildings typically range in height from 8 to 12 feet. Assumed the maximum height of approximately 12 feet.

- Activity Start Date
Start Month: 4
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 6
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.009437
SO_x	0.000216
NO_x	0.083723
CO	0.124064

Pollutant	Total Emissions (TONs)
PM 10	0.003380
PM 2.5	0.003109
Pb	0.000000
NH_3	0.000136

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000971
N_2O	0.000206

Pollutant	Total Emissions (TONs)
CO_2	24.364192
CO_2e	24.449856

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000971
N_2O	0.000206

Pollutant	Total Emissions (TONs)
CO_2	24.364192
CO_2e	24.449856

4.1 Building Construction Phase

4.1.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 2
Number of Days: 0

4.1.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 3000
Height of Building (ft): 12
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

4.1.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.19758	0.00487	1.83652	1.63713	0.07527	0.06925
Forklifts Composite [HP: 82] [LF: 0.2]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.24594	0.00487	2.34179	3.57902	0.11182	0.10287
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cranes Composite [HP: 367] [LF: 0.29]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02140	0.00428	527.46069	529.27080
Forklifts Composite [HP: 82] [LF: 0.2]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02138	0.00428	527.09717	528.90603
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.17629	0.00195	0.08955	2.95708	0.00397	0.00351	0.02332
LDGT	0.18352	0.00254	0.14910	3.25659	0.00536	0.00474	0.02507
HDGV	0.74048	0.00601	0.72832	12.29440	0.02207	0.01953	0.05087
LDDV	0.06612	0.00098	0.06901	2.77248	0.00250	0.00230	0.00820
LDDT	0.06461	0.00116	0.09938	1.99411	0.00313	0.00288	0.00858
HDDV	0.09539	0.00409	2.19554	1.45330	0.03392	0.03121	0.03218
MC	2.40935	0.00259	0.66742	12.25997	0.02286	0.02022	0.05495

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01229	0.00442	292.95562	294.57715
LDGT	0.01389	0.00641	382.32732	384.58223

HDGV	0.05910	0.02689	904.49480	913.97497
LDDV	0.03831	0.00066	291.77518	292.92945
LDDT	0.03134	0.00096	348.07179	349.14153
HDDV	0.02602	0.00304	1220.56430	1222.11928
MC	0.11001	0.00285	390.41003	394.00938

4.1.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

- Activity Location
County: Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Site Grading - Travel Camp

- Activity Description:
The Proposed Action involves construction and operation of a travel camp that would result in approximately 6.5-acres of recreational space for campers and RV owners.

Assumptions: Travel Camp (6.5 acres) - unpaved peninsula/tent area (0.3 acres) = approximately 6.2 acres of grading area

Beautification of the shoreline through strategic plantings will add aesthetic appeal to this waterfront location, but no work to alter the shoreline through grading or adding armaments (such as riprap or bulkheads) is part of this Proposed Action, and no alterations to the marina infrastructure (e.g., in-water work) are part of this Proposed Action.

- Activity Start Date
Start Month: 1
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 3
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.035735
SO_x	0.000572
NO_x	0.317049
CO	0.369947

Pollutant	Total Emissions (TONs)
PM 10	5.388015
PM 2.5	0.013506
Pb	0.000000
NH_3	0.000170

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.002538
N_2O	0.000523

Pollutant	Total Emissions (TONs)
CO_2	63.131080
CO_2e	63.350294

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.002538
N_2O	0.000523

Pollutant	Total Emissions (TONs)
CO_2	63.131080
CO_2e	63.350294

5.1 Site Grading Phase

5.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 2
Number of Days: 0

5.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 270072
Amount of Material to be Hauled On-Site (yd^3): 360
Amount of Material to be Hauled Off-Site (yd^3): 360

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC

POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Graders Composite [HP: 148] [LF: 0.41]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.31292	0.00490	2.52757	3.39734	0.14041	0.12918
Other Construction Equipment Composite [HP: 82] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.28160	0.00487	2.73375	3.50416	0.15811	0.14546
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.35280	0.00491	3.22260	2.72624	0.14205	0.13069
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Graders Composite [HP: 148] [LF: 0.41]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02153	0.00431	530.81500	532.63663
Other Construction Equipment Composite [HP: 82] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02140	0.00428	527.54121	529.35159
Rubber Tired Dozers Composite [HP: 367] [LF: 0.4]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02160	0.00432	532.54993	534.37751
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.17629	0.00195	0.08955	2.95708	0.00397	0.00351	0.02332
LDGT	0.18352	0.00254	0.14910	3.25659	0.00536	0.00474	0.02507
HDGV	0.74048	0.00601	0.72832	12.29440	0.02207	0.01953	0.05087
LDDV	0.06612	0.00098	0.06901	2.77248	0.00250	0.00230	0.00820
LDDT	0.06461	0.00116	0.09938	1.99411	0.00313	0.00288	0.00858
HDDV	0.09539	0.00409	2.19554	1.45330	0.03392	0.03121	0.03218
MC	2.40935	0.00259	0.66742	12.25997	0.02286	0.02022	0.05495

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01229	0.00442	292.95562	294.57715
LDGT	0.01389	0.00641	382.32732	384.58223

HDGV	0.05910	0.02689	904.49480	913.97497
LDDV	0.03831	0.00066	291.77518	292.92945
LDDT	0.03134	0.00096	348.07179	349.14153
HDDV	0.02602	0.00304	1220.56430	1222.11928
MC	0.11001	0.00285	390.41003	394.00938

5.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

- Activity Location
County: Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Water, Sewer, and Gas

- Activity Description:
Approximately 50 pull-through RV camp sites would be constructed, including concrete vehicle and picnic pads, and water, sewer, and electric hook-ups. Rustic tent camp sites would also be constructed and include tables and grills, water and electrical hook-ups, and vehicle parking spaces. Paved vehicle circulation roads, walking paths, landscaping, street and site lighting, sewage lift stations, storm water management, utility upgrades, and area directional signage would also be included.

Water, Sewer, and Gas:
1.) Water Main (400 LF)
2.) Water laterals (800 LF)
3.) Fire protection mains (700 LF)
4.) Fire protection laterals (50 LF)
5.) Wastewater mains (700 LF)
6.) Wastewater laterals (1,500 LF)

Total: 4,150 LF (with a width of approx. 4 ft) = 16,600 SF of trenching

- Activity Start Date
Start Month: 5
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 11
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.009229
SO_x	0.000151

Pollutant	Total Emissions (TONs)
PM 10	0.332598
PM 2.5	0.002138

NO_x	0.075127
CO	0.121371

Pb	0.000000
NH_3	0.000119

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000678
N_2O	0.000149

Pollutant	Total Emissions (TONs)
CO_2	16.841481
CO_2e	16.902734

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000678
N_2O	0.000149

Pollutant	Total Emissions (TONs)
CO_2	16.841481
CO_2e	16.902734

6.1 Trenching/Excavating Phase

6.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 2
Number of Days: 0

6.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 16600
Amount of Material to be Hauled On-Site (yd^3): 46
Amount of Material to be Hauled Off-Site (yd^3): 46

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

6.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.39317	0.00542	3.40690	4.22083	0.09860	0.09071
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.45335	0.00542	3.58824	4.59368	0.11309	0.10404
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	587.02896	589.04350
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02385	0.00477	587.87714	589.89459
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.17629	0.00195	0.08955	2.95708	0.00397	0.00351	0.02332
LDGT	0.18352	0.00254	0.14910	3.25659	0.00536	0.00474	0.02507
HDGV	0.74048	0.00601	0.72832	12.29440	0.02207	0.01953	0.05087
LDDV	0.06612	0.00098	0.06901	2.77248	0.00250	0.00230	0.00820
LDDT	0.06461	0.00116	0.09938	1.99411	0.00313	0.00288	0.00858
HDDV	0.09539	0.00409	2.19554	1.45330	0.03392	0.03121	0.03218
MC	2.40935	0.00259	0.66742	12.25997	0.02286	0.02022	0.05495

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01229	0.00442	292.95562	294.57715
LDGT	0.01389	0.00641	382.32732	384.58223
HDGV	0.05910	0.02689	904.49480	913.97497
LDDV	0.03831	0.00066	291.77518	292.92945
LDDT	0.03134	0.00096	348.07179	349.14153
HDDV	0.02602	0.00304	1220.56430	1222.11928
MC	0.11001	0.00285	390.41003	394.00938

6.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7. Personnel

7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Civilian employees / Civilian users

- Activity Description:
The proposed action will include 50 RV sites, each having concrete vehicle pads. The calculations estimate approximately 150 RV's traveling to and from the RV park in any given year.

Assumption: average distance RV will travel is 200 miles to RV park and 200 miles back, a total of 400 miles. 150 RV's each traveling 400 miles = 60,000 miles per year.

- Activity Start Date
Start Month: 9
Start Year: 2027

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions of Criteria Pollutants:

Pollutant	Emissions Per Year (TONs)
VOC	0.170132
SO_x	0.001800
NO_x	0.097786
CO	2.508161

Pollutant	Emissions Per Year (TONs)
PM 10	0.004034
PM 2.5	0.003570
Pb	0.000000
NH_3	0.019657

- Global Scale Activity Emissions of Greenhouse Gasses:

Pollutant	Emissions Per Year (TONs)
CH_4	0.011309
N_2O	0.004294

Pollutant	Emissions Per Year (TONs)
CO_2	271.624290
CO_2e	273.185255

7.2 Personnel Assumptions

- Number of Personnel
Active Duty Personnel: 0
Civilian Personnel: 150
Support Contractor Personnel: 0
Air National Guard (ANG) Personnel: 0
Reserve Personnel: 0

- Default Settings Used: No

- Average Personnel Round Trip Commute (mile): 400

- Personnel Work Schedule

Active Duty Personnel:	1 Days Per Week
Civilian Personnel:	1 Days Per Month
Support Contractor Personnel:	5 Days Per Week
Air National Guard (ANG) Personnel:	4 Days Per Week
Reserve Personnel:	4 Days Per Month

7.3 Personnel On Road Vehicle Mixture

- On Road Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	37.55	60.32	0	0.03	0.2	0	1.9
GOVs	54.49	37.73	4.67	0	0	3.11	0

7.4 Personnel Emission Factor(s)

- On Road Vehicle Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.16957	0.00190	0.08196	2.80238	0.00386	0.00342	0.02313
LDGT	0.17392	0.00249	0.13191	3.10395	0.00529	0.00468	0.02488
HDGV	0.70741	0.00602	0.64868	11.49389	0.02105	0.01862	0.05058
LDDV	0.06039	0.00094	0.05759	2.44427	0.00240	0.00221	0.00820
LDDT	0.05890	0.00115	0.08859	1.93637	0.00313	0.00288	0.00858
HDDV	0.08599	0.00399	2.07150	1.40983	0.02829	0.02603	0.03202
MC	2.40040	0.00259	0.66574	12.13084	0.02286	0.02023	0.05528

- On Road Vehicle Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01161	0.00433	286.19118	287.77073
LDGT	0.01285	0.00618	375.54040	377.70078
HDGV	0.05495	0.02541	905.98821	914.92429
LDDV	0.03577	0.00066	280.82255	281.91314
LDDT	0.03086	0.00096	343.83206	344.88960
HDDV	0.02569	0.00304	1190.97230	1192.52118
MC	0.10864	0.00285	390.50561	394.07095

7.5 Personnel Formula(s)

- Personnel Vehicle Miles Travel for Work Days per Year

$VMT_P = NP * WD * AC$

VMT_P: Personnel Vehicle Miles Travel (miles/year)
NP: Number of Personnel
WD: Work Days per Year
AC: Average Commute (miles)

- Total Vehicle Miles Travel per Year

$VMT_{Total} = VMT_{AD} + VMT_C + VMT_{SC} + VMT_{ANG} + VMT_{AFRC}$

VMT_{Total}: Total Vehicle Miles Travel (miles)
VMT_{AD}: Active Duty Personnel Vehicle Miles Travel (miles)

VMT_C: Civilian Personnel Vehicle Miles Travel (miles)
VMT_{SC}: Support Contractor Personnel Vehicle Miles Travel (miles)
VMT_{ANG}: Air National Guard Personnel Vehicle Miles Travel (miles)
VMT_{AFRC}: Reserve Personnel Vehicle Miles Travel (miles)

- Vehicle Emissions per Year
$V_{POL} = (VMT_{Total} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{Total}: Total Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Personnel On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

8. Construction / Demolition

8.1 General Information & Timeline Assumptions

- Activity Location
County: Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Parking for RV Slips

- Activity Description:
Approximately 50 pull-through RV camp sites would be constructed, including concrete vehicle and picnic pads, and water, sewer, and electric hook-ups. RV spaces would be configured to allow pull-through access for full-sized rigs and access roads would provide for adequate maneuvering space in/out of individual spaces as well as into and out of the facility itself.

Assumptions: An RV parking pad is typically at least 20 feet wide and 40-50 feet long.
20 ft by 50 ft = 1000 SF per parking pad
1000 SF * (50 parking pads) = 50,000 SF all parking pads

- Activity Start Date
Start Month: 5
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 7
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.008895
SO_x	0.000135
NO_x	0.060287
CO	0.093839

Pollutant	Total Emissions (TONs)
PM 10	0.002472
PM 2.5	0.002273
Pb	0.000000
NH_3	0.000132

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)

Pollutant	Total Emissions (TONs)

CH_4	0.000569
N_2O	0.000126

CO_2	14.384126
CO_2e	14.435869

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000569
N_2O	0.000126

Pollutant	Total Emissions (TONs)
CO_2	14.384126
CO_2e	14.435869

8.1 Paving Phase

8.1.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

8.1.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 50000

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

8.1.3 Paving Phase Emission Factor(s)

ATTACHMENT 1
DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.55280	0.00854	4.19778	3.25481	0.16332	0.15025
Pavers Composite [HP: 81] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.23717	0.00486	2.53335	3.43109	0.12904	0.11872
Paving Equipment Composite [HP: 89] [LF: 0.36]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18995	0.00487	2.06537	3.40278	0.08031	0.07388
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.54202	0.00541	3.61396	4.09268	0.15387	0.14156
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02313	0.00463	570.16326	572.11992
Pavers Composite [HP: 81] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02133	0.00427	525.80405	527.60847
Paving Equipment Composite [HP: 89] [LF: 0.36]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02141	0.00428	527.70636	529.51732
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	586.91372	588.92786
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**NH_3**
LDGV	0.17629	0.00195	0.08955	2.95708	0.00397	0.00351	0.02332
LDGT	0.18352	0.00254	0.14910	3.25659	0.00536	0.00474	0.02507
HDGV	0.74048	0.00601	0.72832	12.29440	0.02207	0.01953	0.05087
LDDV	0.06612	0.00098	0.06901	2.77248	0.00250	0.00230	0.00820
LDDT	0.06461	0.00116	0.09938	1.99411	0.00313	0.00288	0.00858
HDDV	0.09539	0.00409	2.19554	1.45330	0.03392	0.03121	0.03218
MC	2.40935	0.00259	0.66742	12.25997	0.02286	0.02022	0.05495

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	**N_2O**	**CO_2**	**CO_2e**
LDGV	0.01229	0.00442	292.95562	294.57715
LDGT	0.01389	0.00641	382.32732	384.58223
HDGV	0.05910	0.02689	904.49480	913.97497
LDDV	0.03831	0.00066	291.77518	292.92945
LDDT	0.03134	0.00096	348.07179	349.14153
HDDV	0.02602	0.00304	1220.56430	1222.11928

MC	0.11001	0.00285	390.41003	394.00938

8.1.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / $acre)^2$ / acre)

9. Construction / Demolition

9.1 General Information & Timeline Assumptions

- Activity Location
County: Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Walkways

- Activity Description:
Paved area to include approximately 500 square feet (SF) of walkways.

- Activity Start Date
Start Month: 9
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 9
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.006088
SO_x	0.000102
NO_x	0.046460
CO	0.070415

Pollutant	Total Emissions (TONs)
PM 10	0.001960
PM 2.5	0.001802
Pb	0.000000
NH_3	0.000101

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000417
N_2O	0.000095

Pollutant	Total Emissions (TONs)
CO_2	10.334661
CO_2e	10.373372

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000417
N_2O	0.000095

Pollutant	Total Emissions (TONs)
CO_2	10.334661
CO_2e	10.373372

9.1 Paving Phase

9.1.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 9
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

9.1.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 500

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

9.1.3 Paving Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.55280	0.00854	4.19778	3.25481	0.16332	0.15025
Pavers Composite [HP: 81] [LF: 0.42]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5
Emission Factors	0.23717	0.00486	2.53335	3.43109	0.12904	0.11872
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5

Emission Factors	0.54202	0.00541	3.61396	4.09268	0.15387	0.14156
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02313	0.00463	570.16326	572.11992
Pavers Composite [HP: 81] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02133	0.00427	525.80405	527.60847
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	586.91372	588.92786
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02149	0.00430	529.70686	531.52468

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**NH_3**
LDGV	0.17629	0.00195	0.08955	2.95708	0.00397	0.00351	0.02332
LDGT	0.18352	0.00254	0.14910	3.25659	0.00536	0.00474	0.02507
HDGV	0.74048	0.00601	0.72832	12.29440	0.02207	0.01953	0.05087
LDDV	0.06612	0.00098	0.06901	2.77248	0.00250	0.00230	0.00820
LDDT	0.06461	0.00116	0.09938	1.99411	0.00313	0.00288	0.00858
HDDV	0.09539	0.00409	2.19554	1.45330	0.03392	0.03121	0.03218
MC	2.40935	0.00259	0.66742	12.25997	0.02286	0.02022	0.05495

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	**N_2O**	**CO_2**	**CO_2e**
LDGV	0.01229	0.00442	292.95562	294.57715
LDGT	0.01389	0.00641	382.32732	384.58223
HDGV	0.05910	0.02689	904.49480	913.97497
LDDV	0.03831	0.00066	291.77518	292.92945
LDDT	0.03134	0.00096	348.07179	349.14153
HDDV	0.02602	0.00304	1220.56430	1222.11928
MC	0.11001	0.00285	390.41003	394.00938

9.1.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)

0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / $acre)^2$ / acre)

10. Construction / Demolition

10.1 General Information & Timeline Assumptions

ATTACHMENT 1
DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

- Activity Location
County: Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Electric Services

- Activity Description:
Electric Services included:
1.) Primary Feed (650 LF)
2.) Branch Wiring (1,500 LF)
3.) Transformers (6 Total)
4.) Exterior Lighting (75 Total)

Only services given in linear feet are included in this section (primary feed and branch wiring).

- Activity Start Date
Start Month: 5
Start Month: 2026

- Activity End Date
Indefinite: False
End Month: 11
End Month: 2026

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.004614
SO_x	0.000075
NO_x	0.037549
CO	0.060676

Pollutant	Total Emissions (TONs)
PM 10	0.086715
PM 2.5	0.001069
Pb	0.000000
NH_3	0.000059

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000339
N_2O	0.000074

Pollutant	Total Emissions (TONs)
CO_2	8.412667
CO_2e	8.443283

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.000339
N_2O	0.000074

Pollutant	Total Emissions (TONs)
CO_2	8.412667
CO_2e	8.443283

10.1 Trenching/Excavating Phase

10.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 5
Start Quarter: 1
Start Year: 2026

- Phase Duration
Number of Month: 1
Number of Days: 0

10.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information

Area of Site to be Trenched/Excavated (ft^2): 8600
Amount of Material to be Hauled On-Site (yd^3): 20
Amount of Material to be Hauled Off-Site (yd^3): 20

- Trenching Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

10.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.39317	0.00542	3.40690	4.22083	0.09860	0.09071
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.45335	0.00542	3.58824	4.59368	0.11309	0.10404
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18406	0.00489	1.88476	3.48102	0.06347	0.05839

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Excavators Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02381	0.00476	587.02896	589.04350
Other General Industrial Equipmen Composite [HP: 35] [LF: 0.34]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02385	0.00477	587.87714	589.89459
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				

	CH_4	N_2O	CO_2	CO_2e
Emission Factors	0.02149	0.00430	529.70686	531.52468

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3
LDGV	0.17629	0.00195	0.08955	2.95708	0.00397	0.00351	0.02332
LDGT	0.18352	0.00254	0.14910	3.25659	0.00536	0.00474	0.02507
HDGV	0.74048	0.00601	0.72832	12.29440	0.02207	0.01953	0.05087
LDDV	0.06612	0.00098	0.06901	2.77248	0.00250	0.00230	0.00820
LDDT	0.06461	0.00116	0.09938	1.99411	0.00313	0.00288	0.00858
HDDV	0.09539	0.00409	2.19554	1.45330	0.03392	0.03121	0.03218
MC	2.40935	0.00259	0.66742	12.25997	0.02286	0.02022	0.05495

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01229	0.00442	292.95562	294.57715
LDGT	0.01389	0.00641	382.32732	384.58223
HDGV	0.05910	0.02689	904.49480	913.97497
LDDV	0.03831	0.00066	291.77518	292.92945
LDDT	0.03134	0.00096	348.07179	349.14153
HDDV	0.02602	0.00304	1220.56430	1222.11928
MC	0.11001	0.00285	390.41003	394.00938

10.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)

(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

11. Construction / Demolition

11.1 General Information & Timeline Assumptions

- Activity Location
County: Fairfax
Regulatory Area(s): Washington, DC-MD-VA

- Activity Title: Paved Roadwork

- Activity Description:
1.5 miles of roadwork is anticipated as part of the Marina RV revitalization. Paved vehicle circulation roads, walking paths, landscaping, street and site lighting, sewage lift stations, storm water management, utility upgrades, and area directional signage would also be included. For this section, only the paved roadwork areas are evaluated.

Assumptions:
1.5 miles = 7,920 ft
Width of road = up to 12 feet wide
Area = 95,040 SF

- Activity Start Date
Start Month: 2

Start Month: 2027

- Activity End Date
Indefinite: False
End Month: 7
End Month: 2027

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.026390
SO_x	0.000452
NO_x	0.194244
CO	0.315322

Pollutant	Total Emissions (TONs)
PM 10	0.007617
PM 2.5	0.007005
Pb	0.000000
NH_3	0.000418

- Activity Emissions of GHG:

Pollutant	Total Emissions (TONs)
CH_4	0.001897
N_2O	0.000423

Pollutant	Total Emissions (TONs)
CO_2	47.792727
CO_2e	47.966120

- Global Scale Activity Emissions for SCGHG:

Pollutant	Total Emissions (TONs)
CH_4	0.001897
N_2O	0.000423

Pollutant	Total Emissions (TONs)
CO_2	47.792727
CO_2e	47.966120

11.1 Paving Phase

11.1.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2027

- Phase Duration
Number of Month: 3
Number of Days: 0

11.1.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 95040

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

11.1.3 Paving Phase Emission Factor(s)

- Construction Exhaust Criteria Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.55279	0.00855	4.19775	3.25549	0.16311	0.15007
Pavers Composite [HP: 81] [LF: 0.42]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.22921	0.00486	2.45013	3.43821	0.11941	0.10986
Paving Equipment Composite [HP: 89] [LF: 0.36]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.18341	0.00488	2.01586	3.40316	0.07465	0.06867
Rollers Composite [HP: 36] [LF: 0.38]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.52865	0.00542	3.57666	4.10537	0.14602	0.13434
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]						
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**
Emission Factors	0.17717	0.00489	1.80740	3.48712	0.05440	0.05005

- Construction Exhaust Greenhouse Gasses Pollutant Emission Factors (g/hp-hour) (default)

Cement and Mortar Mixers Composite [HP: 10] [LF: 0.56]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02313	0.00463	570.32048	572.27767
Pavers Composite [HP: 81] [LF: 0.42]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02133	0.00427	525.80912	527.61356
Paving Equipment Composite [HP: 89] [LF: 0.36]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02142	0.00428	528.06776	529.87995
Rollers Composite [HP: 36] [LF: 0.38]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02382	0.00476	587.12246	589.13732
Tractors/Loaders/Backhoes Composite [HP: 84] [LF: 0.37]				
	CH_4	**N_2O**	**CO_2**	**CO_2e**
Emission Factors	0.02148	0.00430	529.61807	531.43559

- Vehicle Exhaust & Worker Trips Criteria Pollutant Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	NH_3

LDGV	0.16957	0.00190	0.08196	2.80238	0.00386	0.00342	0.02313
LDGT	0.17392	0.00249	0.13191	3.10395	0.00529	0.00468	0.02488
HDGV	0.70741	0.00602	0.64868	11.49389	0.02105	0.01862	0.05058
LDDV	0.06039	0.00094	0.05759	2.44427	0.00240	0.00221	0.00820
LDDT	0.05890	0.00115	0.08859	1.93637	0.00313	0.00288	0.00858
HDDV	0.08599	0.00399	2.07150	1.40983	0.02829	0.02603	0.03202
MC	2.40040	0.00259	0.66574	12.13084	0.02286	0.02023	0.05528

- Vehicle Exhaust & Worker Trips Greenhouse Gasses Emission Factors (grams/mile)

	CH_4	N_2O	CO_2	CO_2e
LDGV	0.01161	0.00433	286.19118	287.77073
LDGT	0.01285	0.00618	375.54040	377.70078
HDGV	0.05495	0.02541	905.98821	914.92429
LDDV	0.03577	0.00066	280.82255	281.91314
LDDT	0.03086	0.00096	343.83206	344.88960
HDDV	0.02569	0.00304	1190.97230	1192.52118
MC	0.10864	0.00285	390.50561	394.07095

11.1.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * HP * LF * EF_{POL} * 0.002205) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
HP: Equipment Horsepower
LF: Equipment Load Factor
EF_{POL}: Emission Factor for Pollutant (g/hp-hour)
0.002205: Conversion Factor grams to pounds
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

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APPENDIX G- SECTION 106 CONSULTATION AND INFORMATION

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DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT BELVOIR
9820 FLAGLER ROAD, SUITE 213
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Directorate of Public Works

Mr. Marc Holma
Office of Review and Compliance
Virginia Department of Historic Resources
2801 Kensington Avenue
Richmond, VA 23221

Dear Mr. Holma:

U.S. Army Garrison Fort Belvoir is initiating formal Section 106 consultation with your office in accordance with Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. § 470f), and its implementing regulations, 36 CFR Part 800, for a new proposed undertaking at the Dogue Creek Marina facility at Fort Belvoir, Fairfax County, Virginia (Figure 1).

Proposed Undertaking: As defined by 36 CFR Part 800, the Directorate of Family, Morale, Welfare, and Recreation (DFMWR) is proposing an undertaking to construct a travel camp that would result in approximately 6.5-acres of recreational space for campers and recreational vehicle (RV) owners within the existing Dogue Creek Marina facility at Fort Belvoir, Fairfax County, Virginia (Figures 2-3). The camp would include a support facility with an office, laundry section, camper's lounge space, restrooms and showers, vending machine space, and parking. Approximately 50 pull-through RV camp sites would be constructed, including concrete vehicle and picnic pads, and water, sewer, and electric hook-ups. Approximately 15 rustic tent camping spots would be situated within the small, unpaved peninsula in the southwestern portion of the proposed project area. Rustic tent camp sites would include tables and grills, water and electrical hook-ups, and vehicle parking spaces. Paved vehicle circulation roads, walking paths, landscaping, street and site lighting, sewage lift stations, storm water management, utility upgrades, and area directional signage would also be included.

The proposed undertaking would displace a large number of the dry slips. The existing marina infrastructure, including the piers (and their associated wet slips), boat lift, two-lane boat ramp, and kayak launch with finger pier, would remain in place. The existing approximately 11,000 square foot (SF) Building 1696, located in the vicinity of where Delaware Road forks, would be demolished and replaced with an approximately 10-25 space paved parking lot located south of the new 3,000 SF camp support building. The RV spaces would be configured to allow pull-through access for full-sized

rigs and access roads would provide for adequate maneuvering space in/out of individual spaces as well as into and out of the facility. Beautification of the shoreline through strategic plantings would add aesthetic appeal to this waterfront location, but no work to alter the shoreline through grading or adding armaments (such as riprap or bulkheads) is part of this proposed undertaking, and no alterations to the marina infrastructure (e.g., in-water work) are part of this proposed undertaking. Specific details regarding the final size of the camp support building, number of RV and camper spaces, and configuration of the roadways will be developed as the project moves through the design phases.

The purpose of this undertaking is to provide adequate outdoor camping opportunities for the Fort Belvoir/National Capital Region customers. This would provide Fort Belvoir customers additional space for camp sites in the Northern Virginia region, with convenient access to Washington D.C. and affordable prices compared to commercialized campsites.

Area of Potential Effects (APE): The direct APE is defined as the approximately 6.5-acre limits of disturbance (LOD) for the proposed undertaking (see Figure 2), and the indirect APE consists of areas from which the construction activities and new travel camp would be visible (Figure 4). The APE is directly shielded by woods across the creek to the east and by tree lines along the marina's north and south. The travel camp would be located within the southeast two-thirds of the marina facility on Fort Belvoir's South Post, adjacent to the installation's River Village neighborhood. The APE includes the marina facility and east adjacent River Village neighborhood.

Identification of Historic Properties: U.S. Army Garrison Fort Belvoir has taken steps to identify historic properties within the APE. The APE depicted in Figure 4 was reviewed for previously recorded cultural resources and surveys using the Virginia Department of Historic Resources (VDHR's) online Virginia Cultural Resources Information System (VCRIS). According to VCRIS, three cultural resources surveys, including a Phase I cultural resources survey (FX-097), a Phase II architectural evaluation (FX-255), and a Phase I archaeological survey (FX-257), have been previously conducted within the APE; none of these surveys identified cultural resources within the APE. Based on review of VCRIS, there are no known archaeological resources and four previously recorded architectural resources within the APE.

Resource 1593 (DHR ID# 029-6228) is the marina's northern access gate, built in 1960, for which VDHR provided concurrence with the Army's determination of non-eligibility for listing on the National Register of Historic Places (NRHP) on January 30, 2018. Building 1695 (DHR ID# 029-5491), constructed in 1960, is a lift station within the APE. It has been evaluated under DHR File Number 2017-0493 (Section 110

Submission, Architectural Survey and Evaluation, U.S. Army Garrison, Fort Belvoir, Virginia), for which VDHR provided concurrence with the Army's determination of non-eligibility for listing on the NRHP on January 30, 2018.

Building 1696, also constructed in 1960, is an approximately 4,200 square foot boathouse proposed to be demolished as part of this undertaking. This structure was also evaluated for eligibility pursuant to Section 110 of the NHPA and received VDHR's concurrence on the Army's determination of non-eligibility on the same date as the lift station.

Also within the APE is the marina facility itself, identified as Facility No. 1698 (5465 Hudson Road) (DHR ID# 029-6829). The facility was constructed in 1965 and evaluated for potential eligibility for listing in February 2020. The evaluation recommended a determination of non-eligibility for the facility due to its lack of architectural significance and its lack of relation to the established architectural and historical significance of Fort Belvoir. Further, this facility is outside the boundaries of the Fort Belvoir Historic District. The adjacent River Village neighborhood, covered under the Capehart-Wherry Program Comment, was also not recommended as eligible due to its lack of architectural significance and lack of shared linkages of association, design, and history.

Based on review of Fairfax County historical aerial imagery, the APE was developed over the course of the mid-late 20th century. On 1937 aerial imagery, the LOD consists of a field with tree lines along Dogue Creek. By 1953, unpaved roadways, small docks, boat slips, and other small facilities are visible within the LOD. The marina facilities, including Buildings 1695 and 1696 and the east adjacent River Village neighborhood are seen on 1960 aerial imagery. Additional boat slips, docks, and roadways within the marina facility are visible on 1972 aerial imagery. The unpaved roadways are paved by 1976. The marina facility is further developed with additional docks along Dogue Creek and to the south for construction of additional boat slips throughout the mid-late 20th century to the present day.

NEPA: The U.S. Army Garrison Fort Belvoir will be coordinating its Section 106 review with its environmental assessment (EA) conducted for the proposed project under the National Environmental Policy Act of 1969 (42 United States Code Section 4321 et seq.), herein known as NEPA. Once prepared, this EA will be sent out for public review and comment. The EA will examine the project's potential environmental impacts.

Assessment of Effects: No known historic properties would be affected by this undertaking. New construction for the proposed undertaking would occur in previously

disturbed areas. Should archaeological artifacts or features be encountered during construction, all construction activities in the immediate vicinity of the discovery would stop and VDHR would be contacted immediately to determine appropriate treatment.

Pursuant to Section 106 of the National Historic Preservation Act, 36 Code of Federal Regulations § 800, we request your participation and comments on the proposed undertaking. Please provide written comments within 30 days from the date of this letter to Mr. Kenneth Aunchman, Cultural Resource Manager, at 520-673-1786 or kenneth.w.aunchman.civ@army.mil or 520-673-1786, or Mr. Clellan McMurry, Chief, Compliance Branch, Environmental Division, at clellan.r.mcmurry.civ@army.mil.

Point of contact is Mr. Yun Heo, Director of Public Works, at 703-806-3017 or Yun.heo.civ@army.mil.

Sincerely,

DAVID J. STEWART
COL, U.S. Army
Commanding

Enclosures

Figure 1: Fort Bevloir Location

Figure 2: Proposed Travel Camp Location

Figure 3: Conceptual Site Layout for the Proposed Action

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From: Bellville-marrion, Jennifer (DHR)
To: Joyal, Lauren E CIV USARMY CENAB (USA)
Cc: Aunchman, Kenneth W CIV USARMY ID-SUSTAINMENT (USA); Williams, Courtney M CIV USARMY CENAB (USA); Birge-wilson, Adrienne (DHR)
Subject: [Non-DoD Source] Re: Fort Belvoir Dogue Creek Marina (DHR File No. 2025-3680
Date: Wednesday, May 7, 2025 11:29:43 AM
Attachments: image001.png
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Lauren,

DHR concurs that Building 1696 (the Boathouse) is ineligible. If you have any questions, please let me know.

Sincerely,

DHR
VIRGINIA DEPARTMENT OF HISTORIC RESOURCES

Jenny Bellville-Marrion
Archaeologist - Review and Compliance
Department of Historic Resources

Email jennifer.bellville-marrion@dhr.virginia.gov
Phone 804-482-8091

2801 Kensington Ave, Richmond, VA 23221
www.dhr.virginia.gov

From: Joyal, Lauren E CIV USARMY CENAB (USA) <Lauren.E.Joyal@usace.army.mil>
Sent: Wednesday, May 7, 2025 11:08 AM
To: Bellville-marrion, Jennifer (DHR) <Jennifer.Bellville-Marrion@dhr.virginia.gov>
Cc: Aunchman, Kenneth W CIV USARMY ID-SUSTAINMENT (USA) <kenneth.w.aunchman.civ@army.mil>; Williams, Courtney M CIV USARMY CENAB (USA) <Courtney.M.Williams@usace.army.mil>
Subject: RE: Fort Belvoir Dogue Creek Marina (DHR File No. 2025-3680

Thank you so much for your concurrence that no historic properties will be adversely affected by the proposed undertaking.

To clarify on the evaluation of the Boat House (Building 1696), it was examined as part of a larger architectural survey on Fort Belvoir. That surveyed concluded “not eligible” regarding Building 1696 as well as many others. Your office concurred with the report findings via a letter dated, 30 January 2018; I have attached the concurrence letter from the VADHR. If you would like a copy of the survey report, please let us know.

Could you confirm that Building 1696 is ineligible?

Thanks,
Lauren

From: Bellville-marrion, Jennifer (DHR) <Jennifer.Bellville-Marrion@dhr.virginia.gov>
Sent: Monday, May 5, 2025 2:46 PM
To: Joyal, Lauren E CIV USARMY CENAB (USA) <Lauren.E.Joyal@usace.army.mil>
Cc: Aunchman, Kenneth W CIV USARMY ID-SUSTAINMENT (USA) <kenneth.w.aunchman.civ@army.mil>
Subject: [Non-DoD Source] Fort Belvoir Dogue Creek Marina (DHR File No. 2025-3680

Ms. Joyal,

Thank you for requesting comments from the Department of Historic Resources (DHR) on the referenced project, Fort Belvoir Dogue Creek Marina (DHR File No. 2025-3680. Facility No. 1698 (DHR ID #029-6829) and Resource No. 1696, Boat House (DHR ID #029-6229) have not been evaluated for National Register of Historic Places (NRHP) and Virginia Landmarks Register (VLR) lising eligibility and are within the project APE. As such, they should be treated as eligible for the purposes of this project and effects assessed. It is our opinion that no architectural historic resources will be adversely effected by this project. Based upon the documentation provided, it is our opinion that the historic properties within the Area of Potential Effects (APE) will not be adversely affected by the proposed undertaking.

Implementation of the undertaking in accordance with the finding of *No Adverse Effects* as documented fulfills the Federal agency’s responsibilities under Section 106 of the National Historic Preservation Act. If the scope of the undertaking changes or if the undertaking cannot be completed as proposed in the application submitted and reviewed by DHR, please contact our office for guidance on reinitiating consultation under Section 106.

If you have any questions or require any further assistance, please contact me.

DHR
VIRGINIA DEPARTMENT OF HISTORIC RESOURCES

Jenny Bellville-Marrion
Archaeologist - Review and Compliance
Department of Historic Resources

Email jennifer.bellville-marrion@dhr.virginia.gov
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