

AREA DEVELOPMENT PLAN

FINAL

Naval Surface Warfare Center Carderock Division –
Olney Support Center

July 2026

FOR PUBLIC RELEASE

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Executive Summary

Naval Surface Warfare Center Carderock Division-Olney Support Center encompasses 80+ acres in Montgomery County, Maryland. The U.S. Navy acquired the property from General Services Administration (GSA) in November 2019. The installation is under the command structure of Naval Support Activity (NSA) Washington and supports Naval Surface Warfare Center Carderock Division (NSWCCD). As a newly acquired site, it does not have an Area Development Plan (ADP). P353 Battery Test Facility is a new military construction (MILCON) project programmed for this site. In support of this project, National Capital Planning Commission (NCPC), requires development of a master plan and a Transportation Management Plan (TMP). Development of the ADP and TMP is concurrent. The ADP follows the planning process outlined in the Naval Shore Infrastructure ADP Consistency Guide.

Mission and Vision

The current onsite tenant missions support research, development, acquisition, test, and evaluation (RDAT&E) activities at NSWCCD.

Stakeholders developed a Vision Statement for the ADP during a collaborative Vision Workshop in March 2023:

“Olney Support Center’s vision is to maintain flexibility and adaptability to support current and emerging Navy warfighting efforts to further the mission of NSWC Carderock Division.”

Planning Goals and Objectives

In addition to the Vision Statement, stakeholders created Goals and Objectives to guide ADP development. Goals included:

- Safeguard development opportunities
- Ensure complementary, synergistic development of facilities to enhance capabilities and prevent redundant functions
- Maintain exemplary resource stewardship
- Maintain positive relations with the community
- Emphasize end-users’ experience in workspace design and quality of life enhancements

Section 2 details the supporting objectives to achieve these goals.

Implementation of the goals and objectives in development of this ADP considered leadership input, conditions driving development onsite, strategic guidance, policies, relevant initiatives, and interagency coordination.

Site Analysis Summary

The site analysis chapter evaluates existing conditions within the district to establish opportunities, constraints, and other planning considerations to inform the course of action (COA) alternatives.

Buildings and Facilities

NSWCCD-Olney Support Center is a secure installation with access restricted to authorized personnel and properly vetted visitors. An entry control facility is located off Riggs Road. A helipad is located on the western side of the site.

The site's rolling topography and low-profile buildings fit with the surrounding rural character. The antenna communications tower is the tallest structure onsite.

Predominately constructed in 1971, the existing facilities onsite support the primary building (Building 1). The facilities are in fair to good condition. Due to their age, the facilities require maintenance and upgrades during the 20-year planning horizon of this ADP.

Current operations occupy Building 1 and new missions onsite will require construction of new RDAT&E facilities. The current shortfall of onsite storage facilities has led to the temporary use of Conex containers to provide storage space.

Site circulation, parking, and existing infrastructure supports Building 1.

Utilities

Potomac Electric Power Company (Pepco) provides electrical service. Alternative energy sources do not exist onsite; however, there are two electric vehicle charging stations located in the parking lot.

The potable water supply from Washington Suburban Sanitary Commission (WSSC) is sufficient to meet current demand. Future growth and development require additional capacity.

The wastewater treatment plant (WWTP; Building 10-A) capacity limit is 10,000 gallons per day. While sufficient to support current operations, future growth and development require increased capacity. Additional requirements for increasing WWTP capacity are in Section 4.5. Site topography may also require pumping stations for future development.

Stormwater management for future development is important. The site is located within the Upper Hawlings River watershed, which falls within the Patuxent Primary Management Area (PMA) and received water use class designation by the state of IV-P:

Recreational Trout Waters and Public Water Supply. Additional environmental regulations and guidelines must be followed for future development to adhere to the Maryland Department of the Environment (MDE) Tier II antidegradation regulations for stormwater management to protect high-quality waters of the U.S. Currently, concrete stormwater channels convey stormwater to a wetland that drains into an unnamed tributary to the Upper Hawlings River located on the eastern boundary of the site. Future development that disturbs more than 5,000 square feet of land must provide stormwater management.

Constraints

Environmental conditions onsite will dictate future development density. Ensuring development does not adversely impact the wetlands onsite and the Tier II high-quality watershed is important. Mitigation measures are available through proper stormwater management. Maryland-National Capital Park and Planning Commission (M-NCPPC) *Environmental Guidelines: Guidelines for Environmental Management and Development in Montgomery County (2021)* include guidelines for watershed management and protection. These guidelines include stream buffers in the PMA. Most of the site is within the PMA transition area. New development should minimize impacts on water quality and maximize the protection of existing environmental features. Overall imperviousness within the PMA transition area of each new project development site should not exceed 10 percent.

To a lesser extent, depending on future facility siting, the rolling topography could result in increased costs from regrading, and extension of supporting utility infrastructure.

Future facilities need to account for extreme weather-related events that impact the reliability of the power supply, management of localized flooding, and changes in annual average temperatures that will increase demand on mechanical systems.

Preferred Alternative

Stakeholders developed three COAs that represent a range of possible solutions with different costs and development intensities. Stakeholders selected COA 1 to serve as the basis for the Preferred Alternative. Given the RDAT&E nature of the mission, participants saw the most value in COA 1, as it represents the most realistic option for known requirements and meets the established goals and objectives.

Site development standards should be part of the implementation of the Preferred Alternative. This includes regulating standards for building envelopes of different facility types, streetscapes, parking lots, landscaping, and pedestrian amenities.

The Illustrative Plan in Figure 1 also includes conceptual facilities and projects to accommodate unknown future capacity and/or requirements that may occur in the next 20 years.

utilizes low impact development (LID), which can be seen in Section 10.4. The NCPC encourages identifying future tree planting areas around the site to aid in additional screening and provide shade; tree planting recommendations are included in Section 7.4. NCPC requires an updated master plan for additional development capacity beyond that identified in the Preferred Alternative.

Interagency Coordination

The NCPC provides overall planning guidance for federal land and buildings in the region by reviewing the design of federal and certain local projects, overseeing long-range planning for future development, and monitoring capital investment by federal agencies. As part of the process, state and regional agencies reviewed and commented on this ADP. The NCPC supports focusing development on the southern end of the site, limiting development footprint size, avoiding development in heavily wooded areas or near the stream, reusing existing parking and facilities to support new development, and adding pedestrian paths to access the development. When employment at the site reaches a critical mass, the NCPC supports the ADP recommendation to implement transportation demand strategies to mitigate additional parking needs on the site. As a component of the ADP, the NCPC requires inclusion of a comprehensive stormwater management approach that

Figure 1 – Illustrative Plan

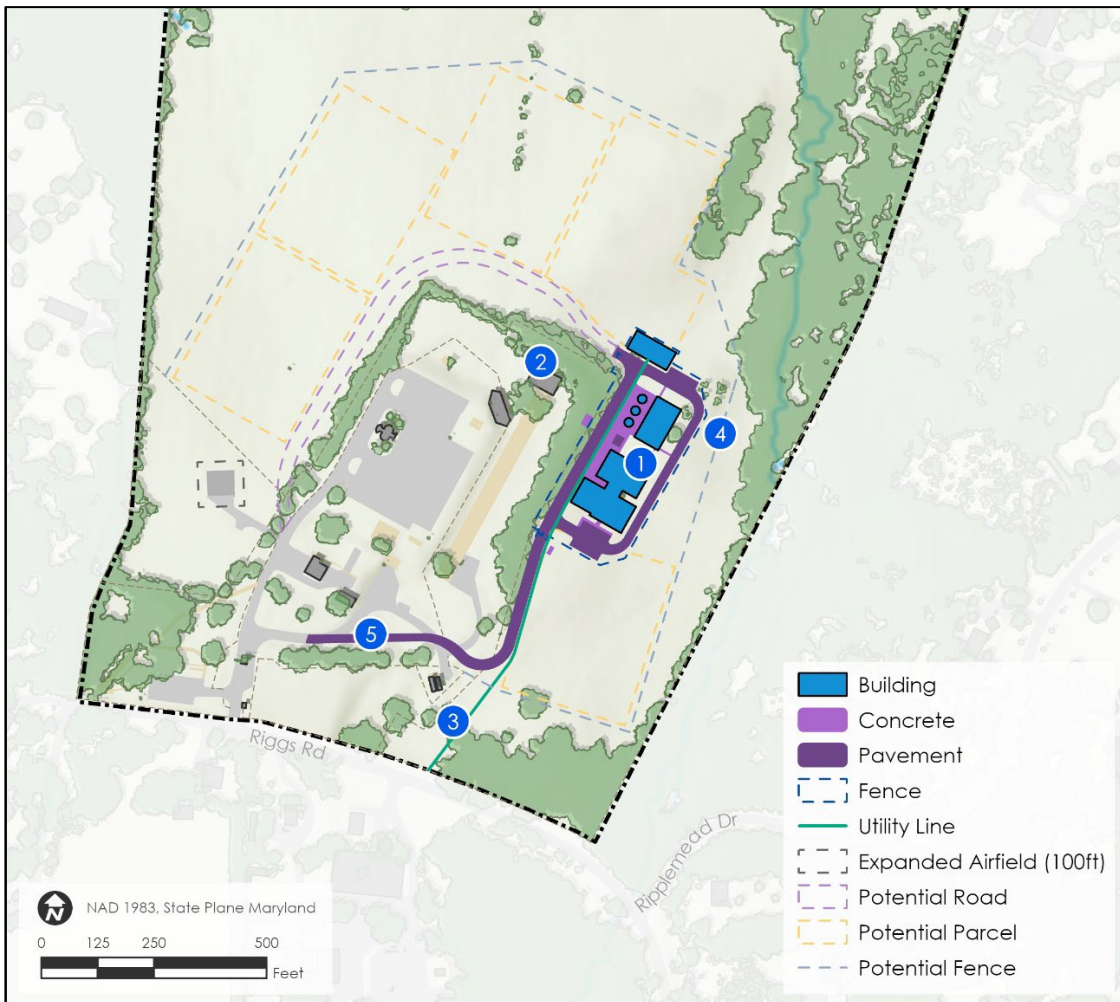


Table 1 – Preferred Alternative Project List

ID	Project Action	Description
1	P353 Battery Testing Facility	Site location for P353.
2	Accelerated Corrosion Control Facility (temporary facility)	Complete all necessary infrastructure improvements to bring temporary facility online.
3	Install new water line	Supply potable water to P353 site.
4	Expand Secure Perimeter	Extend the controlled perimeter fence to include P353 site. This action will also install cameras at appropriate vantage points to replace equipment on the radio tower. Demolition of radio tower.
5	Construct new paved roadway	Straighten existing roadway near the loading dock and extend the existing road to access the P353 site.

1 Mission and Vision

Located in Montgomery County, Naval Surface Warfare Center Carderock Division (NSWCCD)-Olney Support Center encompasses 80+ acres at 5321 Riggs Road, Gaithersburg, Maryland. Department of Homeland Security, Federal Emergency Management Agency (FEMA) previously operated the site. Ownership of the property was private prior to government ownership.

A cattle grazing agreement for a portion of the site previously existed with the adjoining property owner across Riggs Road. The agreement has since expired.

Under FEMA, the site formerly housed the FEMA Alternate Operations Center, part of the U.S. National Warning System and the FEMA National Radio System, which linked FEMA's Emergency Operations Centers. In support of these operations, the site had several different antennas used for satellite communications as well as high-frequency communications. A sidewalk is the only remaining feature after demolition of a former dormitory facility. There are also remnants from the former Nike Missile Program onsite from the 1950's. Other previous government tenants and users onsite included Centers for Disease Control, National Archives, Secret Service, Executive Office of the President, and the State Department.

On 19 November 2019, General Services Administration (GSA) transferred ownership of the site to the U.S. Navy. NSWCCD-Olney Support Center is one of the installations under the command structure of Naval Support Activity (NSA) Washington. The missions of the tenants operating onsite are in support of research, development, acquisition, test, and evaluation (RDAT&E) activities at NSWCCD.

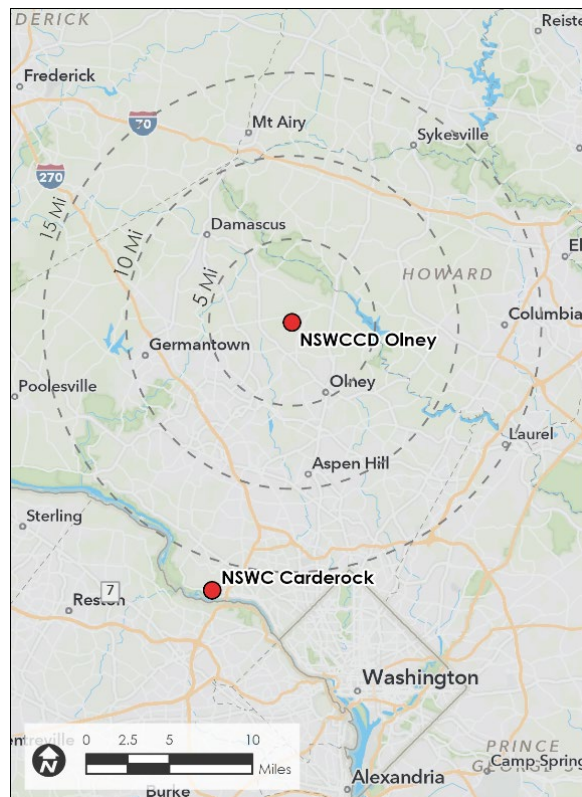
During a Vision Workshop conducted in March 2023, stakeholders developed a Vision Statement for the NSWCCD-Olney Support Center Area Development Plan (ADP):

“Olney Support Center’s vision is to maintain flexibility and adaptability to support current and emerging Navy warfighting efforts to further the mission of NSWC Carderock Division.”

NSWC Carderock has the mission to provide full spectrum research and development, test and evaluation, analysis, acquisition, and Fleet support for the Navy's ships, ship systems, and associated Navy logistics systems.

The installation is in a predominately rural area of Montgomery County, surrounded by working farms and residential housing. Figure 2 displays the local installation context and proximity to NSWC Carderock.

Figure 2 – Regional Location Map



2 Planning Process

The ADP development methodology follows a planning process based on the *Naval Shore Infrastructure ADP Consistency Guide*. The process includes direct input of installation stakeholders and follows strategic guidance from all levels of the Department of Defense (DOD).

An analysis of the mission requirements, existing and proposed land use, facilities conditions, natural and human-made constraints, and other planning drivers established the courses of action (COA) for a long-range development plan.

The process entailed several phases including data collection and analysis, developing a vision, analyzing capability gaps, and developing COAs.

2.1 Project Initiation and Kick-off

The project began with a kick-off meeting and presentation at the installation. Key stakeholders and tenants received an explanation of the process. This step helped gain an understanding of the current and future mission, goals, and vision of the installation and confirmed key drivers of mission growth influencing the ADP process and outputs.

2.2 Data Collection and Analysis

A review of existing documents, strategic guidance, and other pertinent information provided a comprehensive assessment of the current planning baseline. Performance of a qualitative and quantitative analyses on existing conditions developed a site analysis summary.

In addition to document and policy review, this phase included a site visit, administration of stakeholder questionnaires, and stakeholder interviews.

2.3 Vision Development

Input from stakeholders and leadership gathered during a hybrid workshop developed the Vision for the ADP. The vision considered

the desired 20-year end state, mission requirements, maximizing existing resources, and planning assumptions. The output of the workshop consisted of a vision statement and planning goals and objectives.

2.4 Capability Gap Analysis

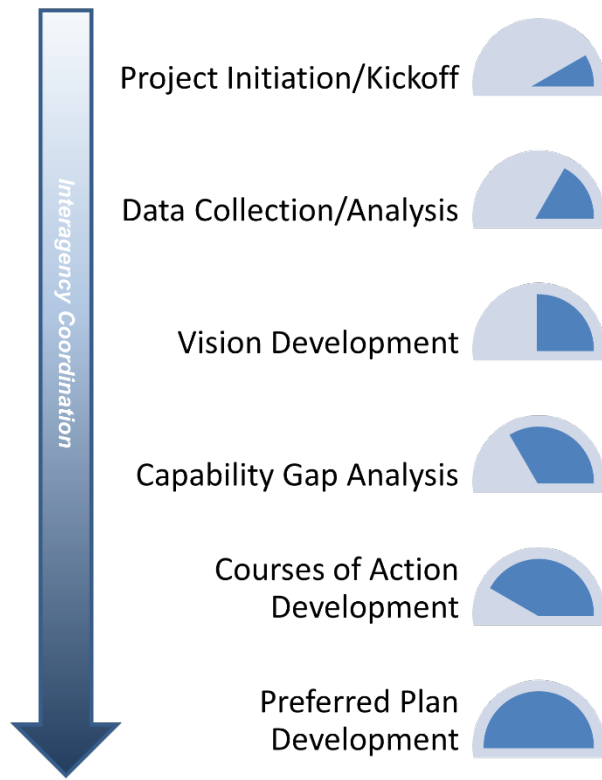
Analysis of collected data further identified capability gaps. The analysis compared current facility assets with known requirements documented in Navy records and identified deficiencies. Gross capability gaps compared with currently planned projects and other information provided by the stakeholders identified the net capability gaps, or those gaps requiring planning actions. The Prioritization Meeting with stakeholders was concurrent with the COA Workshop. Prioritization of gaps included impacts and risks.

The capability gap analysis followed a standard process resulting in standard outputs for use in follow-on phases as well as rolled up for use at the regional and global levels.

2.5 Courses of Action Development

The capability gap analysis resulted in a list of programmed projects from the installation's project list and prioritized capability gaps. Based on the analysis developed in previous phases, stakeholders reviewed the programmed projects and capability caps, and developed alternate COAs, based on varying budgetary constraints and planning scenarios. Chapter 4 describes the results of the effort.

Figure 3 – Planning Process



2.6 Preferred Plan Development

Stakeholders identified the Preferred Alternative; this Preferred Alternative served as the basis for the future development plan. The development plan outlines specific actions based on requirements, logistics, and fiscal considerations, to be implemented in the short-, mid-, and long-range timeframes.

2.7 Interagency Coordination

Naval Facilities Engineering Systems Command (NAVFAC) and NSWCCD stakeholders were involved throughout the ADP development process. This ADP requires ongoing coordination with other agencies.

2.7.1 Community Planning and Liaison Officer (CPLO)

The CPLO is a civilian employee of the Navy who serves as a bridge between the installation and the community. With expertise in compatible development, the CPLO conducts community outreach, education, and

relationship building with elected officials, local and regional planning staff, and other community groups to manage encroachment and sustain military missions. The CPLO for NSA Washington supports Naval Support Facility (NSF) Carderock where Naval Surface Warfare Center (NSWC) is the major tenant as well as NSWCCD-Olney Support Center.

2.7.2 National Capital Planning Commission

The NCPC serves as the central planning agency for the federal government in the National Capital Region. The Commission provides overall planning guidance for federal land and buildings in the region by reviewing the design of federal and certain local projects, overseeing long-range planning for future development, and monitoring capital investment by federal agencies. Therefore, this ADP, accompanying Transportation Management Plan (TMP), and resulting future projects require coordination and review by the NCPC.

Integral to the NCPC review process the following government agencies were invited to review and provide comment on this ADP:

- Maryland Department of Environment
- Maryland Department of General Services
- Maryland Department of Natural Resources
- Maryland Department of Planning
- Maryland Department of Transportation
- Maryland Historical Trust
- Maryland Military Department; Montgomery County
- Maryland National Capital Parks and Planning Commission - Montgomery County
- Metropolitan Washington Council of Governments

2.7.3 Maryland-National Capital Park and Planning Commission

M-NCPPC is a bi-county agency with geographic authority for Montgomery and Prince George's Counties. Responsibilities of the Commission include preparing, adopting, and amending or extending the General Plan (On Wedges and Corridors) for the Physical Development of the Maryland-Washington Regional District in Montgomery and Prince George's Counties. The Commission operates in each county through planning boards appointed by those county governments. The planning boards are responsible for implementation of local plans, zoning ordinances and subdivision regulations, and the administration of the bi-county park system.

An onsite, unnamed tributary discharges to the Hawlings River, which discharges to the Patuxent River. M-NCPPC's *Environmental Guidelines: Guidelines for Environmental Management of Development in Montgomery County* specify buffers and protection areas around the waterways onsite and are applicable to future development. Coordination with the M-NCPPC through the NCPC is appropriate.

2.7.4 Maryland Department of the Environment

MDE protects and preserves the state's air, water and land resources and safeguards the environmental health of Maryland's citizens. MDE's duties encompass enforcement of environmental laws and regulations, long-term planning, and research. NSWCCD-Olney Support Center coordinates with MDE with respect to groundwater protection, wastewater discharge permitting, and stormwater management. Planned future development is subject to review and permitting with MDE.

2.7.5 Maryland Historical Trust

Maryland Historical Trust (MHT) is an agency of Maryland Department of Planning and serves as the Maryland State Historic Preservation Office (SHPO). Due to the age of the facilities onsite, when the Navy acquired

the site in 2019, the facilities did not meet the eligibility criteria under the National Historic Preservation Act. NAVFAC is conducting a historic eligibility assessment, and a determination is still pending. Pending results of the eligibility determination, future development may require coordination with the MHT and the SHPO.

2.8 Development Drivers

Leadership provided input into actions driving development for consideration when creating the ADP.

- P353 is the largest ongoing project.
- While currently unknown, NSWCCD-Olney Support Center may require new projects in response to future missions within the 20-year planning horizon of the ADP.
- Maintaining flexibility and adaptability for the development of the site is important.
- Ability to support emerging requirements and allow NSWCCD to expand in support of critical requirements.
- Road network should support and allow for future growth.
- Consider capacity of the current WWTP and strategies for capacity expansion.
- Redevelopment of existing areas onsite to support minimal future development.

2.9 Goals and Objectives

During the March 2023 Vision Workshop, stakeholders created Goals and Objectives to guide the ADP development.

Stakeholders identified key themes around which to develop goals. They then created objectives in support of the goals. Five goals with supporting objectives guide future development, as listed in Figure 4.

Figure 4 – Goals and Objectives

Goal 1 - Safeguard development opportunities

- **Objective 1.1:** Create logical, sequential development pattern.
- **Objective 1.2:** Plan for future infrastructure development to maintain flexibility.
- **Objective 1.3:** Preserve land for future growth and unanticipated mission requirements.
- **Objective 1.4:** Enhance safety and security.
- **Objective 1.5:** Maintain proper road and infrastructure conditions.
- **Objective 1.6:** Maintain efficiency of existing development.

Goal 2 - Ensure complementary, synergistic development of facilities to enhance capabilities and prevent redundant functions

- **Objective 2.1:** Emphasize shared and common assets and capabilities.
- **Objective 2.2:** Encourage cohesive, cost-effective facility design.
- **Objective 2.3:** Maintain building functionality.
- **Objective 2.4:** Practice innovative design and development to attract and retain the workforce of the future.
- **Objective 2.5:** Promote pedestrian connectivity and circulation between buildings and spaces.

Goal 3 - Maintain exemplary resource stewardship

- **Objective 3.1:** Preserve natural and environmental assets.
- **Objective 3.2:** Maximize efficiency of funding sources.
- **Objective 3.3:** Continue to comply with environmental requirements and regulations.

Goal 4 - Maintain positive relations with the community

- **Objective 4.1:** Plan for compatible mission uses with adjacent community.
- **Objective 4.2:** Assess new development to minimize noticeable emissions and impacts to community.
- **Objective 4.3:** Nurture existing community partnerships.

Goal 5 - Emphasize end-users' experience in workspace design and quality of life enhancements

- **Objective 5.1:** Promote collaborative spaces.
- **Objective 5.2:** Sustain telecommunications amenities.
- **Objective 5.3:** Ensure availability of outdoor fitness amenities.
- **Objective 5.4:** Provide suitable social gathering spaces.

2.10 Strategic Guidance, Policies and Relevant Initiatives

This plan follows a broad spectrum of DOD and Navy guidance from high-level strategic plans to implementing documents and guidelines. The missions at NSWCCD-Olney Support Center are a critical component supporting these plans.

During the data collection phase, review of the following strategic guidance documents and other relevant plans ensured the initial analysis, recommended Preferred Alternative, and final implementation plan aligned with DOD vision and priorities.

2.10.1 Strategic Guidance

Chief of Naval Operations (CNO) Navigation Plan (2024)

The CNO's 2024 Navigation Plan Update builds on the 2022 Plan, maintaining its 18 lines of effort as the guiding framework. The update highlights seven urgent needs, organized into three categories: Warfighting (maintenance elimination, unmanned systems integration, and improved operational command centers), Warfighters (enhanced recruitment and retention, quality of service, and advanced training), and Foundations (critical infrastructure restoration). The plan sets operational targets for 2027, including achieving high combat readiness, eliminating maintenance delays, integrating autonomous systems, developing advanced command centers, overcoming personnel shortfalls, improving Sailor living conditions, advancing training architectures, and repairing critical assets. Successful implementation, in collaboration with Congress, industry, the Joint Force, and Allies, aims to ensure the Navy's heightened state of readiness by 2027 through technology adoption and improved training.

NAVSEA Enterprise Strategy; Force Behind the Fleet (2025)

NAVSEA Enterprise Strategy is focused on delivering ready, modern, and sustainable ships and systems to support U.S. Navy warfighting requirements.

The strategy is organized into five Lines of Effort:

- Accelerate Force Generation – Deliver ships and combat systems
- Generate Readiness – Maintain, modernize, and sustain platforms
- Generate, Capture, and Use Data – Drive innovation with data
- Strengthen the Navy Team – Attract, retain, and grow the workforce
- Strengthen the Foundation – Enhance critical infrastructure

2.10.2 DOD and Navy Instructions

This plan follows and references applicable Unified Facilities Supplements (UFS), and regulations relevant to master planning and future development at NSWCCD-Olney Support Center, including the increased focus on resilience and sustainability.

Department of Defense Instruction 4165.70 (2005, Change 1 2018)

Per *Department of Defense Instruction (DODI) 4165.70, Real Property Management*, issued April 2005, incorporating Change 1 in August 2018, states all military departments must maintain a current inventory of all real property assets and properly oversee their use and management. The ADP provides guidance for upholding DODI 4165.70 through the administration of real property assets through long-range planning.

Unified Facilities Supplement 2-100-01 (2026)

In accordance with *Unified Facilities Supplement 2-100-01 Installation Master Planning (2026)*, the ADP provides a holistic view of facility requirements, capability gaps, and planning actions to guide development over the next 20 years.

Installation Development Plan Consistency Guide, Version 3.2 (April 2025)

The *Naval Shore Infrastructure Installation Development Plan (IDP) Consistency Guide* provides the framework for all Navy master planning documents, processes, and

methodologies in support of the defense mission. The intent of the IDP Consistency Guide is to standardize Navy installation master planning products, including ADPs, from workshop facilitation and procedures, geospatial data and mapping format, and document organization. The IDP assists the integration of planning guidance at all levels of the Shore Infrastructure Planning hierarchy – from DOD to regional and local scales – following UFS 2-100-01. The ADP follows the planning process and products outlined in the IDP Consistency Guide.

Area Development Plan Consistency Guide, Version 2.1 (April 2025)

The NAVFAC *Naval Shore Infrastructure ADP Consistency Guide* ensures development of plans that are consistent and standardized for each district within an installation. The guide provides a unified approach to develop smaller scale planning districts that are united by function or architectural character. Guidance includes requirements for developing ADPs with various planning horizons.

The planning team followed these requirements to develop the ADP and comply with NAVFAC’s standardization policies. The planning process used the methodology in the guide.

2.10.3 Installation Planning Initiatives

NSA Washington encompasses the following geographically distinct properties, or activities, in and around Washington, D.C.: the Washington Navy Yard; NSF Naval Research Laboratory; NSF Suitland; NSF Naval Observatory; NSF Arlington, NSF Carderock, and NSWCCD-Olney Support Center. As an activity within the NSA Washington command structure, the NSA Washington IDP is the primary driver of the planning and design considerations for NSWCCD-Olney Support Center. The standards in this ADP reflect this hierarchical relationship and are informed by the following planning initiatives.

Installation Master Plan Washington Navy Yard (2017)

NSA Washington is primarily located at the Washington Navy Yard. The scope of the Washington Navy Yard Installation Master Plan is limited to the geographic boundaries of this particular activity within the NSA Washington command structure. While NSWCCD-Olney Support Center was acquired after this master plan was developed and it does not specifically address NSWCCD-Olney Support Center, this master plan is a useful reference to provide context for NSA Washington. The vision statement in the Installation Master Plan for the Washington Navy Yard is as follows: “The Washington Navy Yard serves as the “Quarterdeck of the Navy,” and one of its most important administrative centers in the Nation. This master plan builds upon the historic heritage of the site as a premier installation with distinctive headquarters, first-class support facilities, and attractive green spaces that enable a high quality of life within the urban setting of Washington, D.C.”

NSF Carderock Installation Master Plan (2014)

NSF Carderock and NSWCCD-Olney Support Center are both activities within the NSA Washington command structure where NSWCCD is the major tenant. Because of their shared support of the same major tenant, the missions of these two activities are operationally aligned. Acquisition of the NSWCCD-Olney Support Center occurred after development of the NSF Carderock Installation Master Plan. The plan does not directly address NSWCCD-Olney Support Center.

NSF Carderock specializes in full-spectrum research and development, acquisition, test, and evaluation (RDAT&E), engineering, and Fleet support organization for the Navy’s ships, submarine, military watercraft, and unmanned vehicles. NSF Carderock is a world-class installation that serves as a premier center of RDAT&E essential to the U.S. Navy. The NSF Carderock Installation Master Plan creates a campus of modern facilities that will enable the continued viability

of the installation while honoring its historical heritage.

This ADP supports the mission and development priorities of NSF Carderock.

2.10.4 Local Planning Authorities

National Capital Planning Commission (NCPC)

Established by Congress in 1924, the NCPC serves as the central planning agency for the federal government in the National Capital Region. Enactment of the National Capital Planning Act (40 U.S.C. §§ 8701 et seq.) requires federal agencies to submit project plans and development proposals for federal property to the NCPC for review. Depending upon the project's location (within or outside Washington), the Commission either approves the project or provides recommendations (advisory authority). The NCPC exercises advisory authority over the development of NSWCCD-Olney Support Center.

3 Site Analysis Summary and Capability Gaps

The site analysis chapter evaluates existing conditions within the district to establish opportunities, constraints, and other planning considerations to inform the COA alternatives.

3.1 Built Constraints

The NSWCCD-Olney Support Center District encompasses over 80 acres. Most of the district is undeveloped with a cluster of facilities near Riggs Road. Figure 5 illustrates the location of the existing facilities.

3.1.1 Street Condition

The road and parking network is comprised of a series of bituminous paved roads and service drives that provide direct access to existing buildings, helipad, parking areas, and structures.

The existing GeoReadiness Center (GRC) data does not contain information on the roadway classification. The paved roadways are unnamed. Paving of roadways occurred within the past 1-2 years and they are in good condition. Resurfacing of the Building 1 parking lot occurred within the past 10 years.

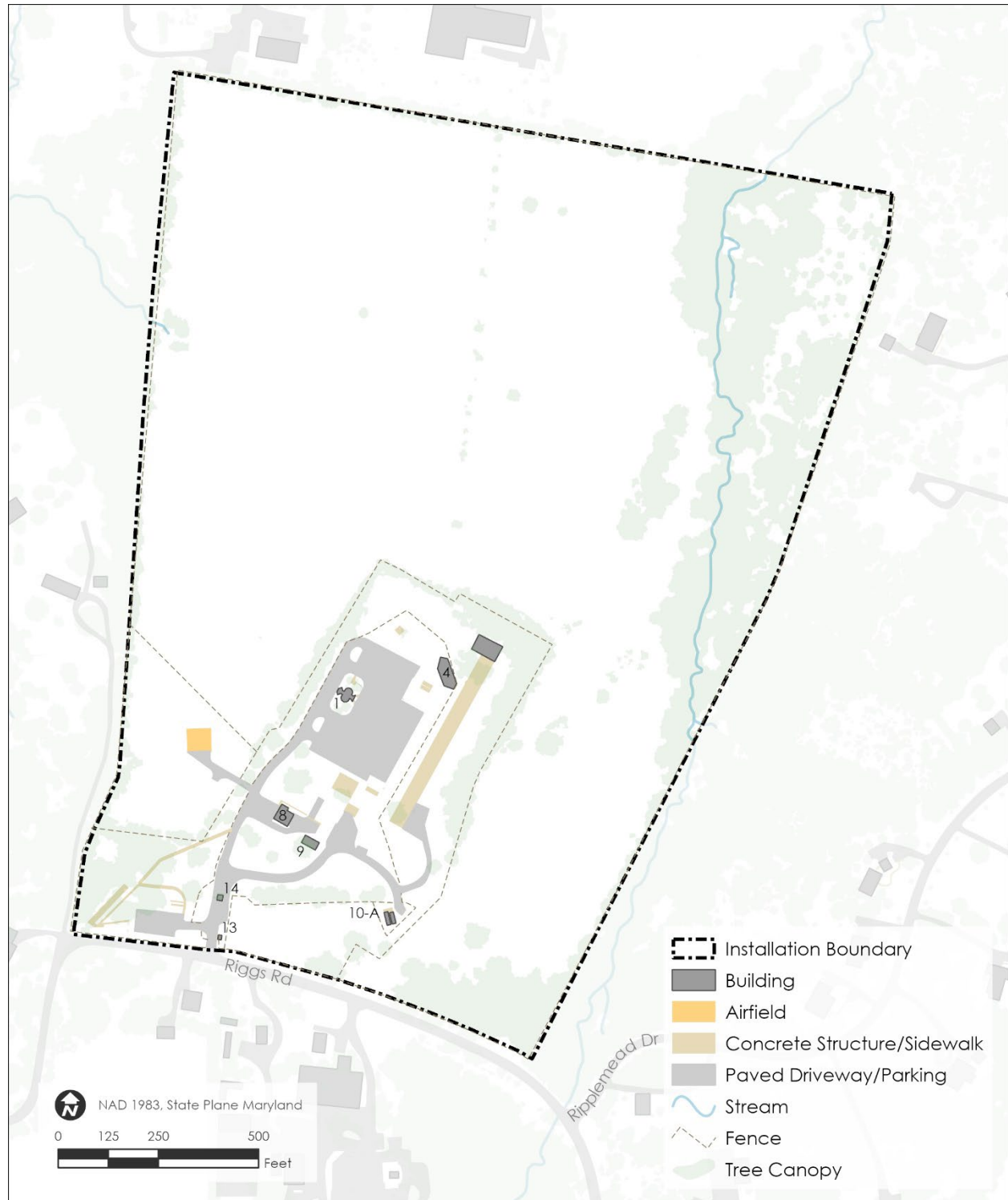
Table 2 – Existing Facilities

FACILITY NO	REAL PROPERTY ASSET (RPA) NAME	RPA TYPE CODE
1	UNDERWATER EQUIPMENT LAB	Building
2	ANTENNA COMMUNICATIONS	Structure
3	SATELLITE DOME, CIR DISP ANT	Building
4	CHILLED WATER PLANT BLDG	Building
8	VEHICLE MAINTENANCE SHOP	Building
9	GENERAL STORAGE BUILDING	Structure
10-A	SEWAGE TREATMENT PLANT	Structure
13	GENERAL STORAGE BUILDING	Structure
14	ACCESS CONTROL FACILITY	Building
15	PUMP STATION BLDG	Building

Note: Facilities in bold have been demolished and need to be updated in the Navy property records system.

Source: Internet Navy Facility Assets Data Store (iNFADS); accessed 8 February 2023

Figure 5 – Existing Facilities



3.2 Utilities

Utility networks at NSWCCD-Olney Support Center are primarily privatized systems and include electrical, potable water, wastewater, and stormwater systems.

3.2.1 Energy- Conventional

A commercial provider generates and supplies the energy consumed at the site.

Electrical System

Potomac Electric Power Company (Pepco) provides electrical service.

Natural Gas System

Natural gas is not available at the site. While the local utility provider maintains a natural gas distribution network, the surrounding area does not have natural gas service. There are no available connections in proximity to supply a future connection.

3.2.2 Energy- Alternative

Solar

Outside entities previously evaluated the site for solar panel usage. This evaluation deemed the site not suitable citing access barriers as the reason for unsuitability.

Energy Conservation

Small scale energy conservation measures have been employed to improve energy efficiency and reduce consumption including re-lamping to replace fluorescent lighting with light-emitting diode (LED) lighting. The new lighting systems utilize motion sensors, dimmers, and timers to reduce unnecessary usage.

Previous occupants installed two, Level 2, electric vehicle (EV) charging stations. Figure 6 shows the location of the EV charging stations in the parking lot. NSWCCD-Olney Support Center does not currently have any EVs in its fleet. NSWCCD has electric government owned vehicles (GOV). The EV charging stations are compatible with these vehicles.

On-site Renewable Energy

On-site renewable energy projects do not yet exist. A study to determine the viable options for meeting DOD energy reduction requirements would be beneficial.

3.2.3 Water System

Potable Water

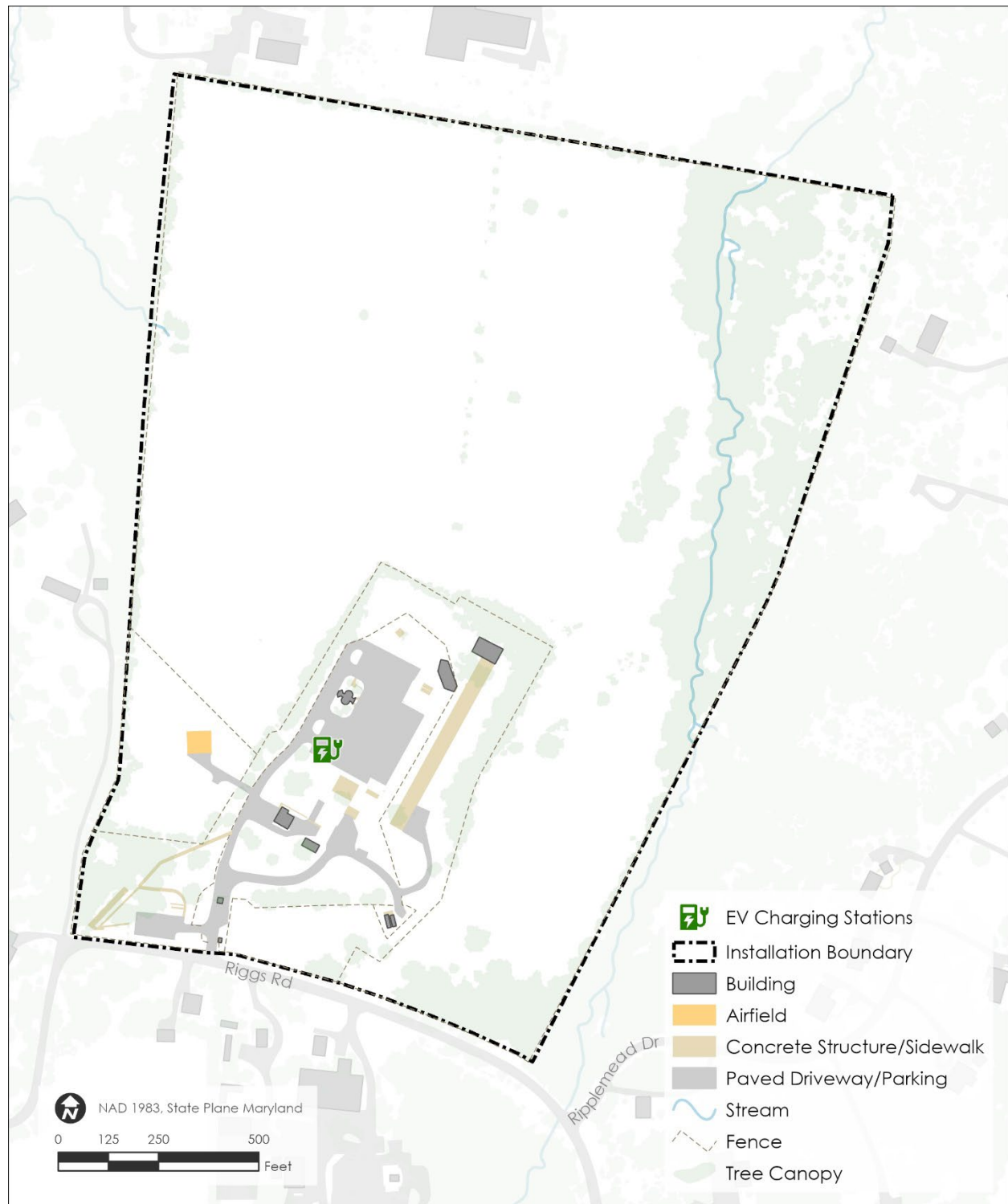
The Washington Suburban Sanitary Commission (WSSC) supplies potable water. WSSC draws water from the Potomac River.

The Navy provides water quality monitoring for the site since the existing water system is classified as a consecutive Public Water System (a distribution system only with less than 15 service connections that serves a daily average of 25 people or more at least 60 days a year), and a Non-Transient Non-Community Water System (non-community system serve 25 or more people over six months per year - not year-round residents). As a result, the site is exempt from federal and state monitoring requirements.

According to the Drinking Water System Sanitary Survey (November 2022), a well water system previously existed onsite. Area-wide groundwater contamination required the abandonment of two wells onsite.

The Land Title Survey includes easements for WSSC onsite.

Figure 6 – Existing Electric Vehicle Charging Stations



3.2.4 Wastewater System

Public sewer service is not available. Collection and treatment of wastewater onsite is in Building 10-A, which has a current capacity of 10,000 gallons per day. Upgrades to the existing WWTP to a mini membrane bioreactor (MBR) treatment system occurred in February 2020. The WWTP operates under a wastewater discharge permit issued by the MDE; State Discharge Permit 18-DP-2542, National Pollutant Discharge Elimination System (NPDES) permit MD0025666.

The discharge flow is consistent with the capacity listed in the latest *Montgomery County Comprehensive Master Water and Sewer Plan*, as amended and adopted in 2018 by Montgomery County and approved by MDE's Water Resources Planning Program. It is also in conformance with the State's Smart Growth initiatives.

3.2.5 Stormwater System

The stormwater concrete channel begins near the main entrance road and runs along the loading dock access road before it transitions to a grass stormwater swale. The grass swale leads towards the WWTP. Past the WWTP, stormwater flows to the southeast corner of the boundary where there is an existing wetland. The wetland then drains into an existing creek that borders the eastern side of the installation boundary. The creek flows north as an unnamed tributary of the Upper Hawlings River, which is part of the Patuxent River watershed.

A second tributary of the Upper Hawlings River is just outside the west side of the installation boundary that collects stormwater runoff from the western portion. Multiple, small culverts located beneath the access roadways provide additional stormwater flow away from roadways and facilities.



Grass stormwater swale with erosion control matting

Stormwater Management

Based on the *Maryland Stormwater Design Manual* (2009), development that disturbs more than 5,000 square feet of land requires stormwater management.

Each project in which stormwater management regulations apply must evaluate and provide applicable stormwater management for each Point of Investigation (POI). A POI is a location where concentrated runoff from a drainage area flows from the project site. Classification of each POI evaluated is either "New Development" or "Redevelopment." Both new development and redevelopment have minimum stormwater management control requirements, with new development having more stringent requirements.

As project development continues implementation of LID stormwater management techniques will be prioritized and incorporated into future construction plans.

- A POI classified as new development has a drainage area with existing impervious surface equal to or less than 40 percent.
- A POI classified as redevelopment has a drainage area that exceeds 40 percent impervious surface and no net increase in impervious area.

Stormwater management treatment requirement calculations for each POI are based on the development classification.

Stormwater Best Management Practices (BMPs) provide treatment which MDE classifies under two types.

- Traditional, structural water quality stormwater BMPs. Chapter 3 of the Maryland Stormwater Design Manual covers performance criteria and design guidance. Typical structural BMPs include wet ponds, extended detention ponds, wetlands, infiltration basins, and bioretention.
- Environmental Site Design (ESD) BMPs. These are small-scale stormwater BMPs, including structural and non-structural practices. Chapter 5 of the Maryland Stormwater Design Manual covers performance criteria and design guidance. Typical ESD BMPs include green roofs, permeable pavement, disconnection of runoff, sheet flow to conservation areas, rainwater harvesting, micro-bioretention, and swales.

The Stormwater Management Act of 2007 requires ESD implementation to the maximum extent practicable and use for structural practices only where ESD BMPs are not feasible.

MDE provides a spreadsheet to calculate the ESD volume required, based on a project's existing and proposed land uses. BMPs must treat a volume of stormwater runoff based on the existing and proposed land uses and the increase in impervious area. If ESD measures treat the entire ESD volume, then the stormwater management requirements are completely satisfied (including channel protection, water quality, and groundwater recharge). Design and construction of micro-bioretentions, bioswales, permeable pavement, green roofs, and other ESD practices, which convey runoff from proposed impervious areas to ESD measures, treat, and

discharge safely offsite achieves satisfaction of stormwater management requirements.

3.3 Constraints

The existing environmental (i.e., natural) and operational (i.e., human-made) constraints have the potential to place restrictions or limitations on the degree of development that can occur within a given portion of the site. The following sections identify and provide a summary of these constraints.

3.3.1 Environmental Constraints

The following sections identify the environmentally sensitive areas that tend to restrict development. This section also discusses the external environmental conditions that could impact the lifespan of existing facilities and infrastructure as well as the design and placement of new facilities.

Topography

Figure 7 illustrates the site elevation contours. The site has a rolling topography. Elevations range from 468 feet to 538 feet above sea level. Analysis of slopes determines land suitability for development. Steep slopes (greater than 25 percent) can limit development opportunities and increase construction costs.



Area of steep slopes on the eastern boundary

Figure 7 – Environmental Constraints



Extreme Weather Conditions

Extreme weather is defined as recurrent flooding, drought, desertification, wildfires, thawing permafrost, sea level fluctuation, changes in mean high tides, or any other weather-related event, or anticipated change in environmental conditions, that present (or

are projected to present) a recurring annual threat to the security of the United States or of allies and partners of the United States. Table 3 lists the severe weather considerations from UFS 2-100-01 applicability to the site, and the impact magnitude.

Table 3 – Severe Weather and Climate Change Scenarios

Consideration	Applicable	Impact Magnitude	Comments
Storm Surge Flooding	N	N/A	Storm surge flooding occurs along the coast. The installation is located 40 miles inland from the coast.
Non-Storm Surge (Riverine or Surface) Flooding	N	N/A	The installation has not experienced any significant flooding from the unnamed tributary. Maryland Flood Risk Application does not indicate a risk of flooding. <i>Source:</i> https://mdfloodmaps.net/map/
Hurricanes/Typhoons	Y	3	Maryland experiences storm effects (high winds, heavy rains, and flash floods associated with hurricanes along the East Coast; however, only three hurricanes have made landfall in Maryland since 1878. <i>Source:</i> https://www2.atmos.umd.edu/~climate/SpecialTopics/hurricanes.php
High Winds	Y	3	Maryland experiences high winds associated with hurricanes along the East Coast. <i>Source:</i> https://www2.atmos.umd.edu/~climate/SpecialTopics/hurricanes.php
Tornadoes	Y	3	Several tornadoes per year impact Maryland. Eighteen F1 tornadoes and two F2 tornadoes have touched down near Gaithersburg, MD in the past 75 years. The closest to the installation was 7 miles away on 20 August 1991. <i>Source:</i> https://www.geostat.org/data/gaithersburg-md/tornados
Drought	Y	2	While seasonal "dry" periods may be experienced, the Long-term model of the Multi-Indicator Drought Index (MIDI) indicates that the installation is in an area that is "neither wet or dry" <i>Source:</i> https://www.drought.gov/states/maryland/county/montgomery

Consideration	Applicable	Impact Magnitude	Comments
Wildland Fires/Wildfires	Y	2	Debris burning and arson comprise most of the wildfires in Maryland. <i>Source:</i> https://dnr.maryland.gov/forests/pages/fire/index.aspx
Permafrost	N	N/A	
Desertification	N	N/A	
Volcanic	N	N/A	
Seismic	Y	4	Maryland's relative risk of damage is rated as moderate. Probabilistic risk is Low (4-10%) - Maryland has a very low chance of experiencing a damaging earthquake in a 50-year period; maximum expected magnitude of 4.0-4.5. The 2011, 5.8 magnitude earthquake in Mineral, VA resulted in superficial cracking in Building 1. <i>Source:</i> http://www.mgs.md.gov/geology/geohazards/earthquakes_and_maryland.html#map
Tsunamis	N	N/A	Seismic activity in the Atlantic Ocean could trigger a Tsunami affecting the East Coast. The site is located inland of the Atlantic Ocean and Chesapeake Bay
Subsidence	Y	4	Montgomery County is in an area of low susceptibility and incidence of subsidence; however, sinkhole occurrences have been documented in the county. <i>Source:</i> https://www.montgomerycountymd.gov/OEMHS/Resources/Files/HMP2018-FinalPlan-FEMAApproved.pdf
Extreme Water Levels	N	N/A	Not impacted by extreme water levels. <i>Source:</i> https://coast.noaa.gov/slr/#/layer/slr/10/-8583482.726038303/4751792.6542463135/16/satellite/none/0.8/2050/interHigh/midAccretion
Precipitation Change	Y	1	Average annual total precipitation projected to increase by approximately 6% - 9% by the end of the century. Data indicates a shift to higher-intensity events with a slight increase in overall annual rainfall in the future. <i>Source:</i> https://www.montgomerycountymd.gov/climate/Resources/Files/climate/climate-action-plan-appendix-c-climate-vulnerability-assessment.pdf

Consideration	Applicable	Impact Magnitude	Comments
Annual Average Temperature Increases	Y	1	Montgomery County average annual temperatures projected to increase significantly, especially in summer and fall. <i>Source: https://www.montgomerycountymd.gov/climate/Resources/Files/climate/climate-action-plan-appendix-c-climate-vulnerability-assessment.pdf</i>
Extreme Heat/Cold	Y	1	By 2100, Montgomery County extreme heat projected to increase with the average annual number of days above 95°F and 105°F increasing by 56 and 9 days, respectively. <i>Source: https://www.montgomerycountymd.gov/climate/Resources/Files/climate/climate-action-plan-appendix-c-climate-vulnerability-assessment.pdf</i>

Impact Magnitude

- 5 - Catastrophic - Permanent damage and/or loss of infrastructure service.
- 4 - Major - Extensive infrastructure damage requiring extensive repair.
- 3 - Moderate - Widespread infrastructure damage and loss of service. Damage recoverable by maintenance and minor repair.
- 2 - Minor - Localized infrastructure service disruption. No permanent damage.
- 1 - Insignificant - No infrastructure damage.

Adapted from CSIRO, 2007.

The risks with the greatest impact to assets and infrastructure include seismic activity and subsidence; however, the likelihood of these occurrences is low. Future development should mitigate against these risks through proper design for seismic activity and testing for subsidence.

The most likely existing and projected risks and threats to NSWCCD-Olney Support Center include high-winds, hurricanes, and tornadoes, which can adversely impact the reliability of the power supply. The installation has already taken steps to provide redundant sources of power to the installation in event of temporary outages.

The installation does not currently experience issues with localized flooding; however, future development should mitigate against the increase in high intensity events.

Increases in average annual temperature and extreme heat/cold events can result in increased demand on mechanical systems to meet thermal comfort requirements. Future development should include systems that conserve energy, while meeting thermal comfort demands.

Floodplain Management

Executive Order 11988, Floodplain Management, directs federal agencies to avoid construction to the extent possible within the 100-year floodplain. The 100-year floodplain represents an area with a 1-percent chance of flood occurrence per year; the 500-year flood has a 0.2-percent chance occurrence per year. FEMA delineates floodplains with the following flood zone designations: 100-year flood (AE), 100-year flood with stream flooding hazards (AO), 100-year with wave hazards (VE), and 500-year flood (X). According to the Land Title Survey, the property is in an area designated as Zone X on the Flood

Insurance Rate Map (FIRM). The property is not in a flood zone.

3.3.2 Assets

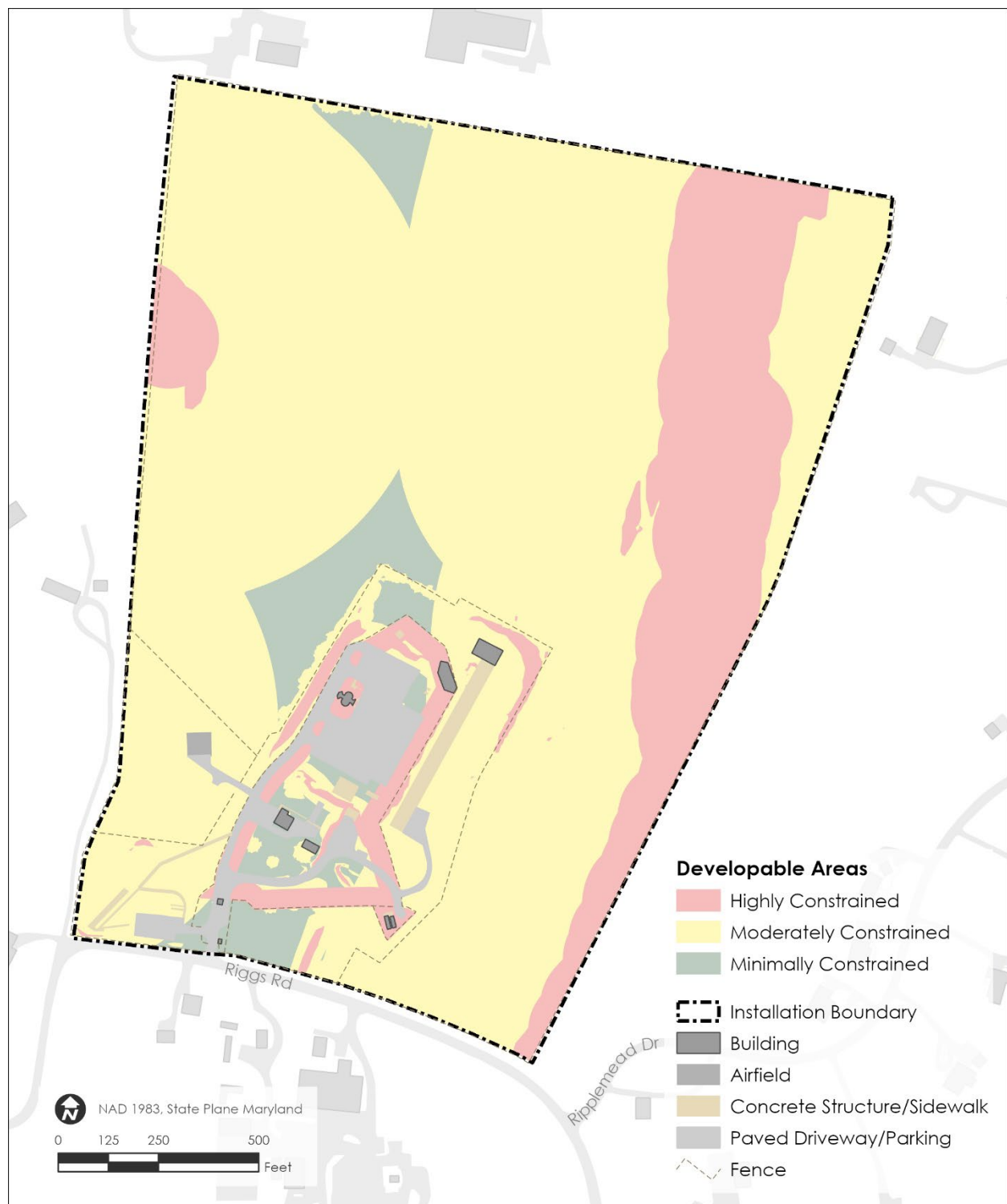
Analyzing NSWCCD-Olney Support Center existing assets allows for a more comprehensive understanding of the context that shapes the development and siting of future projects.

- The location of NSWCCD-Olney Support Center in proximity to NSWCCD and Washington, D.C.
- Positive existing relationships with the adjacent property owners and the community.
- Availability of open space that could accommodate future mission growth, if necessary.
- Track record of exemplary resource stewardship.
- Upgrades and investments to the existing helipad by previous occupants.

3.3.3 Combined Constraints

The combined constraints represent a composite of the environmental and operational constraints. Figure 8 illustrates the Developable Areas with limited development potential or that require special consideration. It provides a general guide for locations that could have the capacity to accommodate future development to support growth.

Figure 8 – Combined Constraints



3.4 Natural, Cultural, and Historic Preservation

The planning process for future development of NSWCCD-Olney Support Center requires consideration of existing natural, cultural, and historic resources.

3.4.1 Natural Resource Preservation

According to the Maryland Department of Natural Resources, the north and northeast portions of the property fall within two Sensitive Species Project Review Areas for federally listed rare, threatened, or endangered species; refer to Figure 7. Work within these areas requires coordination with the Maryland Department of Natural Resources Wildlife and Heritage Service.

NSF Carderock Integrated Natural Resources Management Plan (INRMP) added the NSWCCD-Olney Support Center in phases, with full integration into the 2027 update. Multiple studies were completed as part of this effort (e.g., herptile/amphibians, birds/avian species, small mammals, bats, and insects). The final report and updated mapping is pending. No surveys for aquatic species in the stream have been undertaken.

There is designated critical habitat for the Federally Threatened yellow lance mussel downstream from the Installation along the Hawlings River.

In addition, no culturally or historically important viewsheds are documented.

3.4.2 Cultural Resource Preservation

A Phase I archaeological survey was submitted to the MHT 11 February 2026. Six artifacts were found consisting of ceramic fragments, utility-related metal artifacts, and a quartz lithic flake. The artifacts represent scattered materials within disturbed or redeposited soils and do not meet the criteria for identification of an archaeological site. No intact archaeological deposits or archaeological sites were present. Phase 2 of the archaeological study is anticipated to be completed in November 2026.

3.4.3 Historic Resource Preservation

Most of the facilities were constructed in 1971. More recent improvements occurred with construction of the entry control facility, some electrical lines and back-up power generation.

When the Navy acquired the site in 2019, the facilities did not meet the eligibility criteria under the National Historic Preservation Act (e.g., 50 years old and retain integrity, significant at the national, state, or local level in American history, architecture, archaeology, engineering, or culture). Most of the assets are now greater than 50 years old.

As part of the Phase 2 archaeological study, the contractor is also evaluating the structures on the east side of the site that were part of former Army activity. It is anticipated that the structures will be deemed not eligible, since related Army

Table 4 – Maryland Department of Environment Designated Uses

Designated Use*	Description
I & I-P	Water Contact Recreation and Protection of Nontidal Warmwater Aquatic Life
II & II-P	Support of Estuarine and Marine Aquatic Life and Shellfish Harvesting
III & III-P	Nontidal Cold Water
IV & IV-P	Recreational Trout Waters

* “P” indicates public water supply or reservoir protection areas

Source: Maryland Design Manual, Chapter 5 – Environmental Site Design (2009)

structures on the site to the east are not eligible. Determination is still pending.

3.4.4 Wetland and Water Body Preservation

The purpose of Maryland's water quality standards is to protect, maintain, and improve surface water quality. These standards are comprised of two components: (1) the Designated Uses and (2) water quality criteria. Each major stream segment in Maryland is assigned a Designated Use. Table 4 lists the Designated Uses.

The unnamed tributary at NSWCCD-Olney Support Center is part of the Hawlings River. The Hawlings River is in turn a tributary to the Patuxent River. The site is located within the state 12-digit watershed 021311070945 (Upper Hawlings River). The state water use-class designation for this watershed is IV-P.

Wetlands

According to the National Wetlands Inventory, a designated non-tidal wetland along the unnamed tributary that runs adjacent to the eastern edge of the property. According to the Land Title Survey, the unnamed tributary is a freshwater forested/shrub wetland (PFO1A in the northern section and PSS1/EM5A in the southern section). The state of Maryland gave this tributary a Use IV-P designation and is part of a designated high-quality watershed (Tier II).

MDE established the Tier II waters in accordance with federal antidegradation regulations to protect high quality waters of the U.S. Tier II antidegradation reviews are associated with NPDES, Water and Sewer Amendments, Water Quality Certifications and Wetland or Waterways Permits. Development within the Tier II designation would require additional stormwater management practices and ESD to the maximum extent practicable.

The National Wetlands Inventory online mapping also indicates a small sliver of riverine habitat (R5UBH) connecting the PFO1A wetlands. The Land Title Survey or the National Wetlands Inventory online mapping (data from 1981 imagery) does not include the wetlands depicted in Figure 7 on the western edge of the site. The presence of these wetlands requires verification.

MDE established riparian buffers to minimize the impact of development on the state's water quality and habitat value. The Riparian Buffer Area, illustrated in Figure 7, represents the area of at least 100 feet located directly adjacent to the state's nontidal waters, nontidal wetlands, and tributary streams. Avoid development within this area.

Any development within a wetland and/or waters would require a Joint Federal and State Application for the Alteration of any Floodplain, Waterway, Tidal, or Non-Tidal Wetland Permit.

Development within a wetland would require additional stormwater management practices, as well as additional permitting. This ADP discourages development within any wetlands.

M-NCPPC Stream Buffers

M-NCPPC's *Environmental Guidelines: Guidelines for Environmental Management and Development in Montgomery County* (2021) include guidelines for watershed management and protection. These guidelines establish stream buffers within the Patuxent River PMA.

Based on the use class designation of IV-P, a buffer ranging from 125 to 175-feet applies to the unnamed tributary onsite, dependent on the proximity to steep slopes.

The guidelines do not permit buildings, structures, impervious surfaces, or activities requiring clearing or grading in stream

buffers, except for infrastructure uses, bikeways, and trails found to be necessary, unavoidable, and minimized by working closely with the utility or lead agency. Stream buffer guidelines discourage stormwater management (SWM) facilities.

Patuxent River PMA

The unnamed tributary is also subject to Patuxent River PMA guidelines. The Patuxent River PMA guidelines are in accordance with the Patuxent River Policy Plan adopted in 1984 to protect the watershed.

The Patuxent River PMA controls land use activities to protect and enhance water quality in the rivers and streams. It includes the land that runs along the length of all streams within the watershed.

The purpose of the Patuxent River PMA is to identify and manage land from which nonpoint source pollution is most likely to be transported to the river, the two water supply reservoirs, and ultimately to the Chesapeake Bay. The Hawlings River is a major contributor of nonpoint source pollution to the upper Patuxent River and the Rocky Gorge Reservoir.

Montgomery County's PMA for the Patuxent River is consistent with the PMA widths recommended in the State's Patuxent River Policy Plan, which are 1/4 mile (1,320 feet) for the Patuxent River mainstem and 1/8 mile (660 feet) for all tributaries.

Within the Patuxent River PMA, stream buffers require delineation. Montgomery County expands the State Policy Plan 100-foot buffer recommendation of forested or natural vegetation to be consistent with the buffer guidelines for the state water use-class designation, or IV-P, for the NSWCCD-Olney Support Center. A 50-foot forested buffer is the minimum. Buffers that do not meet the minimum may require afforestation.

The stream buffer area is to be undisturbed and in its natural state. Guidelines do not permit land-disturbing activities such as clearing and grading, in the stream buffer area. Afforestation within the buffer is encouraged and, possibly, the implementation of BMPs.

The area outside of the buffer, but within the Patuxent River PMA is "transition area." New development should minimize impacts on water quality and maximize the protection of existing environmental features. Overall imperviousness within the transition area of each new project development site should not exceed 10 percent. Guidelines allow averaging imperviousness over the entire development, not to exceed 10 percent on the entire site, if proposing a higher imperviousness in the transition area.

3.4.5 Existing Tree Preservation

Existing tree cover onsite is a mixture of coniferous and deciduous trees. Tree canopies delineate the site and provide a natural buffer with the adjoining properties. Tree canopies also delineate the interior fence line, providing additional visual buffer to surrounding uses.

Preservation of the existing tree buffer will maintain functional separation between the site and surrounding rural agricultural/residential properties. The state of Maryland grants legal protection to the integrity of forest resources during land development.

Established in 1991, the Maryland Forest Conservation Act aims to minimize the loss of forest resources during development by making the identification and protection of forests and other sensitive areas an integral part of site planning.

As previously noted, guidelines encourage afforestation in the stream buffer.

Section G: Policies Related to Tree Canopy and Vegetation (updated 2020) of the NCPC's *Federal Environment Element* lists 12 goals the federal government should follow, including:

- Preserving and protecting existing trees
- Transplanting or replacing trees impacted by development
- Conserving tree canopy coverage
- Incorporating new trees and vegetation in plans
- Conserving native plant communities
- Maintaining and preserving woodlands adjacent to waterways
- Encouraging native plant species and removing invasive species
- Protecting and preserving special status plants
- Minimizing heating and cooling requirements through use of vegetation
- Using trees and vegetation to offset greenhouse gas emissions
- Supporting sustainable landscape development practices
- Limiting grass species use to recreational areas



Unnamed tributary to Hawlings River on eastern boundary

Figure 7 depicts the environmental constraints for future development related to the site.

3.5 Defensible Planning

Military installations must be safe and secure to operate effectively and efficiently. Two key programs impact planning: the DOD Mission Assurance program as it relates to Defense Critical Infrastructure and Antiterrorism Force Protection Planning. One of the goals of defensible planning is ensuring a resilient installation in response to both natural and human-caused events.

3.5.1 Critical Infrastructure Protection

The Mission Assurance program guides the protection of critical infrastructure to ensure the continued function and resilience of capabilities and assets directly related to mission execution.

4 COAs/Preferred Alternative

“Planning Analysis and Alternative COAs depict potential solutions and physical development approaches for addressing the installation’s capability gaps, future functional needs, operational mission requirements, and investment priorities.”

Source: IDP Consistency Guide (2025)

Stakeholders developed three conceptual alternatives during the ADP Workshop held on 15 August 2023. The three COAs represent a range of possible solutions with different costs and development intensities.

During development of the COAs, stakeholder preference was for compact development near existing facilities to benefit from shared parking, minimal infrastructure investment, and creating a walkable site. During the early planning process, stakeholders decided COA development would not include a full-build out scenario COA.

During the development of the three COAs stakeholders considered the possibility of redeveloping the helipad to accommodate a future mission requirement. While the area in the vicinity of the helipad is flat, unlike other sections of the district, participants expressed concerns that connections to the current WWTP to accommodate redevelopment would be a challenge given the topography. NSWCCD leadership directed that the ADP maintain all the current capabilities at NSWCCD-Olney Support Center. Ultimately, the participants determined that redevelopment of the helipad is not a favorable option. The COAs and the Preferred Alternative exclude this option.

After the COA workshop, assumptions to the future development parcel changed and the

preferred siting location of P353 shifted. COAs 1, 2, and 3 reflect the results at the time of the COA Workshop. The Preferred Alternative continues to update as conditions and assumptions evolve throughout the planning process.

4.1 COA 1: Known Requirements

COA 1 is typically the option with the most austere budget, including minimal projects to maintain the existing facilities and infrastructure. This option is the “status quo” or “traditional development.” Participants opted to modify COA 1 by limiting it to include only known requirements. Figure 9 illustrates COA 1. Table 5 describes the projects created under this COA.

This COA includes demolition of the existing radio tower. This appurtenance is not a current mission requirement. Demolition of the tower eliminates Federal Aviation Administration (FAA) registration requirements and costs associated with inspecting and maintaining the tower.

4.2 COA 2: Moderate Development

COA 2 identifies potential development parcels for unidentified future mission requirements. Without defined requirements, the assumption is conceptual parcels are approximately one acre in area, with a 6,000 – 10,000 SF footprint. Building types may be a mix of high-bay warehouse, laboratory, and/or testing facilities. Figure 10 illustrates COA 2. Table 6 describes the projects created under this COA including supporting infrastructure improvements, circulation networks, pedestrian connectivity, and quality of life improvements.

4.3 COA 3: Aggressive Development

COA 3 builds on COA 2 and provides a longer-range scenario (11-20 years.) and identifies follow-on potential parcels for development, if needed. Figure 11 illustrates COA 3. Table 7 describes the projects created under this COA.

Table 5 – COA 1: Known Requirements Project List

ID	Project Action	Description
1	P353: Battery Testing Facility	Site location for P353.
2	Accelerated Corrosion Control Facility (temporary facility)	Complete all necessary infrastructure improvements to bring temporary facility online
3	Install new water line	Supply potable water to P353 site.
4	Expand Secure Perimeter	Extend the controlled perimeter fence to include P353 site. This action will also install cameras to replace equipment on the radio tower. Demolition of radio tower.
5	Construct new paved roadway	Straighten existing roadway near the loading dock and extend the existing road to P353 to allow truck access.

Figure 9 – COA 1: Known Requirements

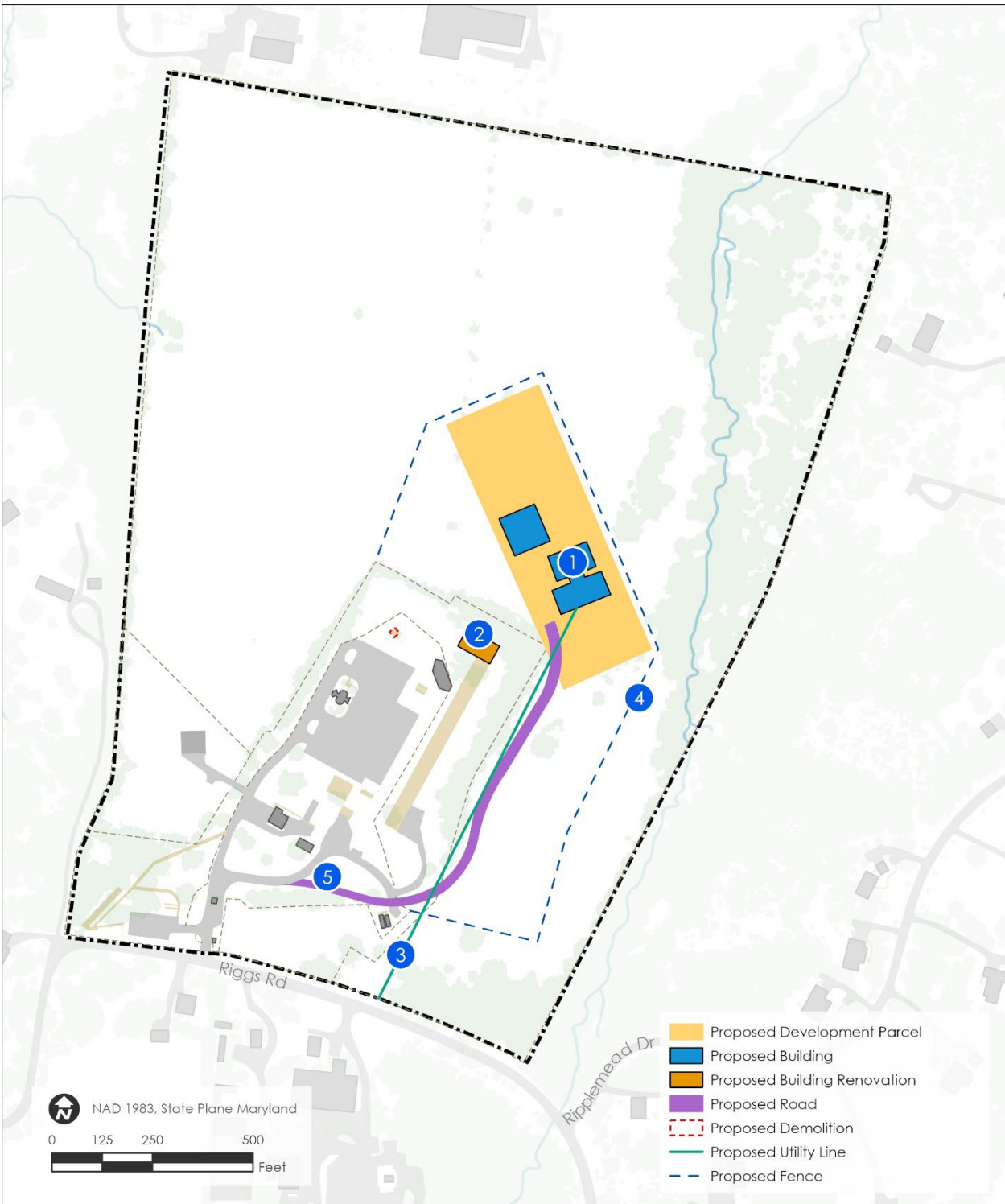


Table 6 – COA 2: Moderate Development Project List

ID	Project Action	Description
1-5	COA 1 Projects	Site location for P353, Accelerated Corrosion Control Facility (temporary facility), new water line, expanded secure perimeter, new access roadway.
6	Additional Development Parcel	Establishes location for an additional development parcel near main entrance to provide compact development onsite. This parcel falls within the expanded secure perimeter established by COA 1. Future facilities would front the access roadway constructed in COA 1.
7	Additional Development Parcel	Establishes location for additional development parcel near P353 to cluster development. This parcel would fall within the expanded secure perimeter established by COA 1. Future facilities would front the access roadway constructed in COA 1.

Figure 10 – COA 2: Moderate Development

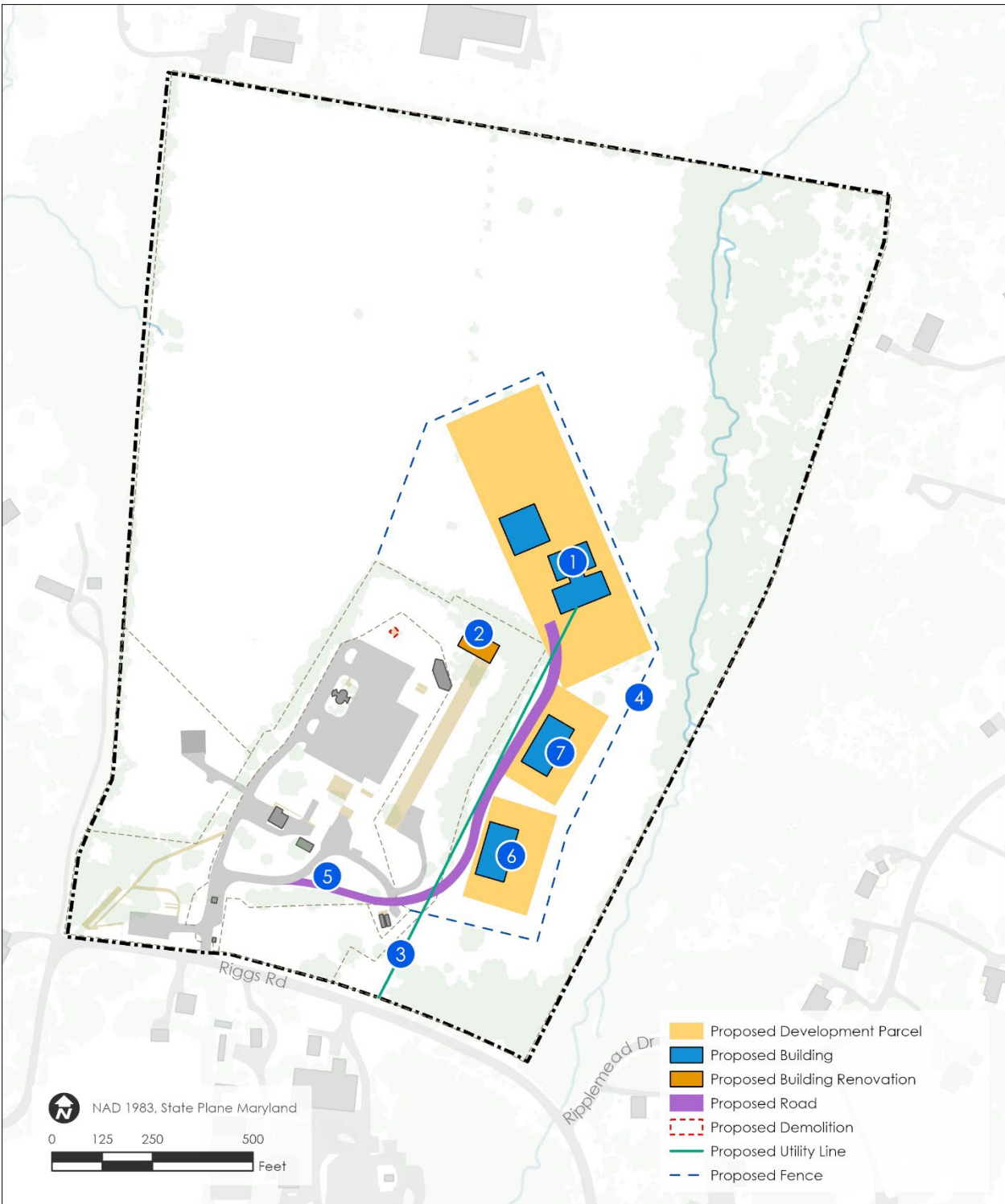
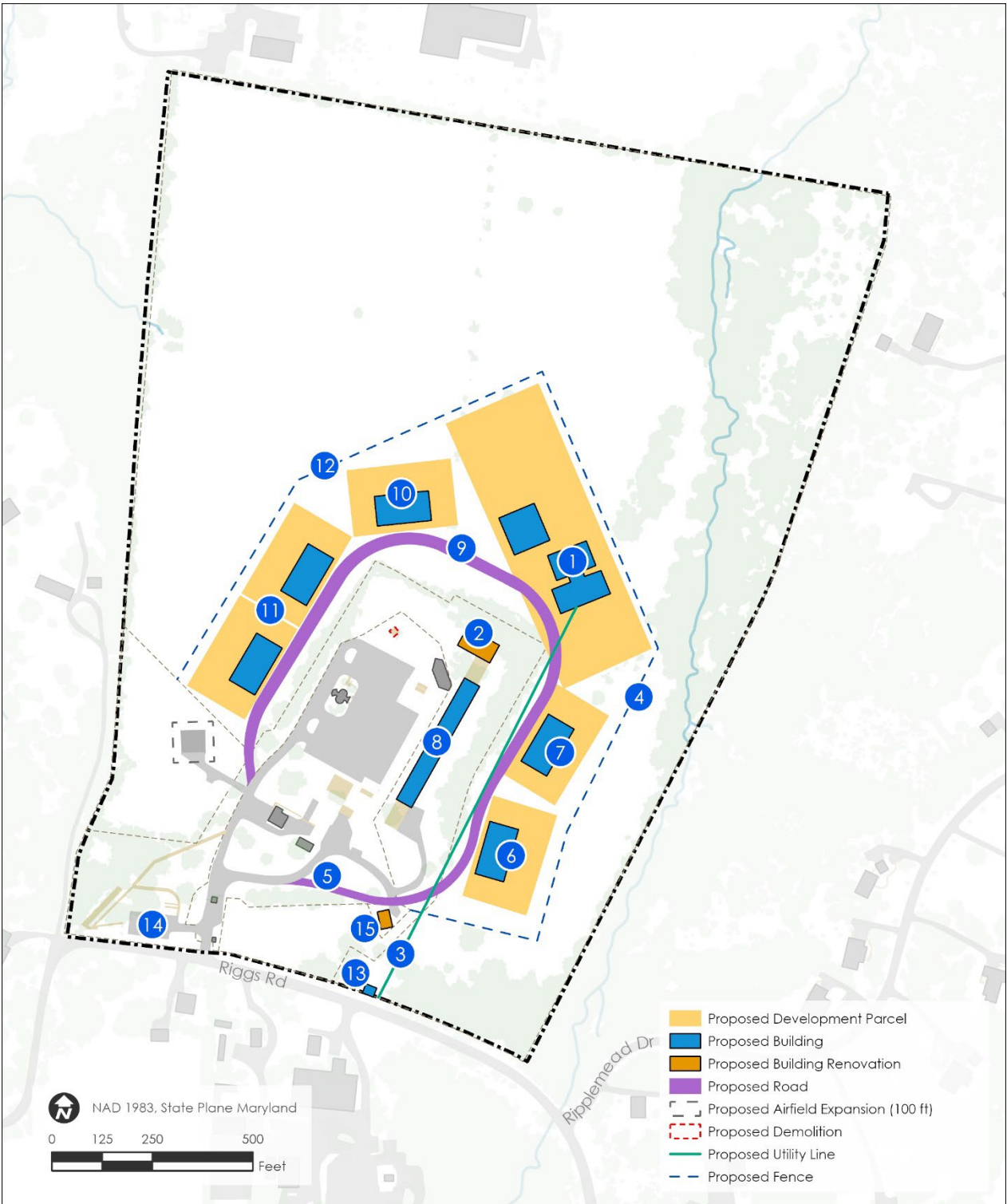


Table 7 – COA 3: Aggressive Development Project List

ID	Project Action	Description
1-7	COA 2 Projects	COA 3 incorporates all the projects in COA 2. In this COA, the Accelerated Corrosion Control Facility would become a permanent facility in the same building footprint.
8	Construct permanent storage facility	Reuses an existing concrete pad to construct a permanent storage facility and laydown area.
9	Construct Loop Road	Expand the P353 access road to create a loop, providing access to the development parcels, as well as improving circulation and safety by eliminating dead-end roads.
10	Additional Development Parcel	Establishes an additional development parcel along north side of the campus.
11	Additional Development Parcels	Establishes two additional development parcels along the western side of the campus.
12	Expand Secure Perimeter	Extends the secure perimeter around the COA 3 development parcels.
13	Secondary Entry Control Facility	Enhances physical security by establishing multiple points for ingress and egress.
14	Construct Truck Inspection Station	Repurposes the existing “cell phone lot” to create a commercial truck inspection.
15	Expansion/Relocation of WWTP	The existing WWTP is a modular system that can either expand or relocate. This action would assess development pressures for the site to determine appropriate capacity and location of WWTP and site or expand it accordingly.

Figure 11 – COA 3: Aggressive Development



4.4 Impervious Calculations by COA

Table 8 summarizes the projected impervious calculations for each of the COAs. The calculations provide the total impervious area of each COA, as well as a cumulative total and a percentage of the total site area, which includes the preceding column values. For example, COA 2 adds 49,525 SF (1.4%) of impervious area. The cumulative total for COA 2 includes the Existing impervious area plus COA 1, for a total of 322,650 SF (9.2%).

Existing quantities were determined using geospatial data. Total site area is from the Navy INFADS Property Record Cards. The plan assumes future buildings have 6,000 SF footprints each.

COA 3 represents the maximum amount of impervious surface development possible (350,000 SF) onsite to stay within the 10 percent averaged over the entire site within the Patuxent River PMA. These quantities are conceptual for planning purposes only. Future development designs require detailed calculations.

4.5 Planning Assumptions for WWTP
NSWCCD - Olney Support Center should work with Montgomery County to update the Montgomery County Comprehensive/Master Water and Sewer Plan (W&S Plan) to indicate the additional needed capacity and the flow amount of that capacity prior to either a request to increase the discharge permit or a MDE construction permit for an expanded

WWTP. If the W&S Plan is not amended, applications, such as construction permits, will be found inconsistent with the W&S Plan and delay the project.

Siting and design calculations for a future WWTP are beyond the scope of this ADP. WWTP requirements for COAs 2 and 3 assume proportional requirements to P353.

There are numerous site features that could impact the feasibility of a WWTP, which include, but are not limited to:

- Permitting, Environmental Requirements, and Monitoring: Design of WWTP will need to meet permitting and environmental requirements.
- Site Topography/Slopes: The WWTP requires siting on flat land. Siting on a steeper sloped area will require more earthwork. If the proposed system is gravity fed, it should be sited at the lowest point.
- Presence of Vegetation: Clearing of vegetation for the WWTP will require mitigation, new vegetation, and/or stormwater management facilities.
- Treated Discharge Tie-In: If tying into an underground system, then proximity to the tie-in location will impact cost. Alternatively, if discharging to a channel, then proximity to the discharge point will impact cost.

Table 8 – Impervious Calculations of COAs

	Existing	COA 1	COA 2	COA 3	Preferred Alternative
Impervious Feature (SF)		P353	Bldg 1 & 2	Bldg 3 & 4	
Buildings and Structures	21,195	28,000	16,500	16,850	49,195
Roadways/Pavement/Stormwater Management	138,930	85,000	33,025	8,725	230,255
Total Impervious Area (SF)	160,125	113,000	49,525	25,575	279,450
Total Site Area (80.42 acres)					
Percent of Total Site Area	4.6%	3.2%	1.4%	0.7%	8.0%
Cumulative Area (SF)	160,125	273,125	322,650	348,225	279,450
Cumulative Percent of Site Area	4.6%	7.8%	9.2%	9.9%	8.0%

- Gravity versus Pressure System: Gravity fed sanitary lines require a positive drainage (i.e., a drop in elevation) through the system from the buildings, to the WWTP, and then from the WWTP to the discharge points.
- Maintenance Access: Facilities require access for maintenance purposes.
- Electric and other Utility Tie-Ins: WWTP siting should be close to available electric power.
- Stormwater management requirements are proportionally based off a one-acre development conceptual requirement provided in Section 10.4.

4.6 Preferred Alternative:

Stakeholders selected COA 1 to serve as the basis for the Preferred Alternative as depicted in Figure 12. Given the RDAT&E nature of the mission of NSWCCD-Olney Support Center, participants saw the most value in COA 1, as it represents the most realistic option for known requirements. COA 1 meets the goals and objectives established during the Vision Workshop and preserves the rural nature of the site. Stakeholders reviewed the projects identified in each of the COAs. Table 9 includes a list of the projects in the Preferred Alternative.

The location and layout of P353 changed after the COA workshop. Figure 12 reflects those changes.

Due to unknown mission requirements that may occur during the 20-year planning horizon, the stakeholders agreed that

Table 9 – Preferred Alternative Project List

ID	Project Action	Description
1	P353: Battery Testing Facility	Site location for P353
2	Accelerated Corrosion Control Facility (temporary facility)	Complete all necessary infrastructure improvements to bring temporary facility online.
3	Install new water line	Supply potable water to P353 site.
4	Expand Secure Perimeter	Extend the controlled perimeter fence to include P353 site. This action will also install cameras to replace equipment on the radio tower. Demolition of radio tower.
5	Construct new paved roadway	Straighten existing roadway near the loading dock and extend the existing road to access P353.

including potential future development parcels in the Preferred Alternative would be prudent. The extension of the roadway into a loop road may also become necessary as future parcels develop.

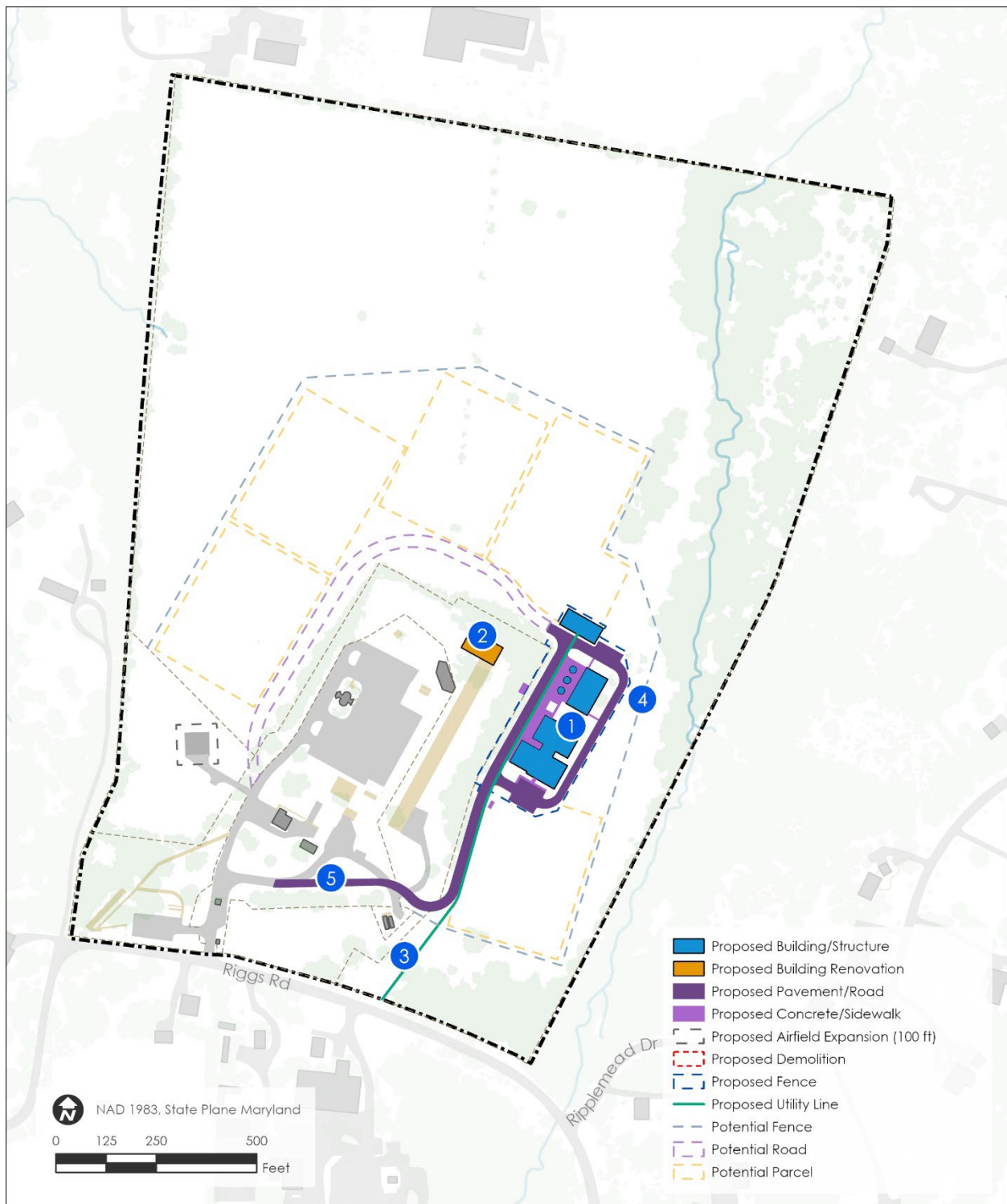
The future parcels are assumed to be approximately two to three acres in size with a mix of building types as indicated in the building envelope standards. Standard facility footprint is 6,000 SF. This assumption allows for future development to be within the 10 percent imperviousness within the PMA transition area as indicated in Table 8.

The Preferred Alternative also includes expansion of the helipad to be compliant with Unified Facilities Criteria (UFC) requirements. There is no current mission need to meet UFC requirements. The option includes compliance should mission needs change over the next 20 years to illustrate the impact to the site and preserve the area from encroachment to meet standard helipad design requirements.

The National Capital Planning Commission supports elements of the Preferred Alternative such as new development concentrated at the southern end of the site, while avoiding large, sprawling footprints in heavily wooded areas or near the unnamed tributary.

The Maryland Department of Planning finds the Preferred Alternative consistent with Maryland's Sustainable Growth Principles, as it includes multiple strategies to advance resilience and sustainability, including an analysis of impacts from climate change.

Figure 12 – Preferred Alternative



5 Circulation and Parking Plan

Existing parking areas include the following:

- The main parking area in support of Building 1, which provides a total of 133 spaces (including three handicap spaces, six spaces designated for government vehicle parking only, and four EV spaces);
- A small parking area by the Building 1 loading dock that provides seven spaces used for deliveries and maintenance workers; and
- An additional cell phone/entry control escort waiting area adjacent to and outside of the fence line from the ECP, which includes 24 spaces.

The roadway improvements in the Preferred Alternative facilitate better site circulation by allowing adequate maneuvering space for deliveries. The Preferred Alternative does not propose additional parking, beyond required organizational parking, for future development parcels. The existing parking near Building 1 is a centralized lot.

The NCPC requires development of a TMP for this ADP. Development of the TMP is concurrent to this ADP. The TMP establishes a transportation plan for the site and develops baseline data, including capacity and level of service for existing conditions and future requirements.

The NCPC supports reuse of existing parking and facilities to support new development.

The Maryland Department of Planning finds the Preferred Alternative consistent with Maryland's Sustainable Growth Principles, as it proposes minimizing the size of parking spaces and using LID methods.

If future development occurs, updates to the TMP would comply with the NCPC thresholds, as outlined in the TMP, and inform the circulation and parking plans.

Transit networks and ridesharing opportunities are not feasible for NSWCCD-Olney Support Center.

6 Sidewalk and Bikeway Plan

This section addresses opportunities to create conditions that encourage physical activity and promote the health and well-being of personnel who work at NSWCCD-Olney Support Center.

6.1 Pedestrian Plans

The installation does not have an existing sidewalk network. Pedestrian paving (sidewalks) exists in a few areas around the existing maintenance garage, Building 8, and by the cell phone lot and former dormitory site (west of the cell phone lot). Onsite personnel walk along the existing pavement areas to exercise and recreate.

If future development with staffing increases occurs, pedestrian connectivity to limit vehicle use onsite and to enhance quality of life is an important consideration in parcel selection and site design. Stakeholders noted that a sidewalk along the loop road would create a more pedestrian friendly environment. Mile markers or distance signs along the sidewalk would encourage physical activity.

The NCPC supports new pedestrian pathways to access new development.

6.2 Bike Plans

The remote location of the site and the lack of bike path connections in the immediate vicinity do not lend itself to a bikeway plan. This section is not applicable.

6.3 Community Gardens

There is a small, ad hoc community garden in operation. If future requirements bring additional development, plans should consider the utility of formalizing the community garden as an amenity for employees.

7 Land Use/Regulating Plan

The regulating plan provides future development guidance regarding form, function, and configuration, but also leaves flexibility to accommodate changing future development and mission requirements.

7.1 Existing Land Use

The IDP Consistency Guide establishes 12 primary Shore Capability Areas (SCA) and an additional category for “natural open space” to designate land uses at Navy installations. GIS mapping layers with land use data were not available in GRC for NSWCCD-Olney Support Center. Therefore, the workshop participants considered aerial imagery and individual facility data to designate existing land uses. The existing land use patterns represent the growth that has occurred over time from previous federal occupants as well as the uses that support the Navy’s current requirements. NSWCCD-Olney Support Center is largely undeveloped with facilities clustered in the southern portion of the site near the gate off Riggs Road. The district consists of over 60 acres of Natural Open Space. Table 10 shows the acreage and percentages associated with each land use category.

- The area near the gate, Building 8, and up to the loading dock for Building 1 is designated Base Support.
- A small portion of the district near Building 10-A, the existing WWTP, is designated Utilities.

- The remainder of the land within the secure perimeter fence in the vicinity of Building 1 is RDAT&E.
- The area within the fence near the helipad is Airfield.

Figure 13 – Existing Land Use shows the existing land use as established during the workshop. This information requires incorporation into the GRC data.

7.2 Future Land Use

The Future Land Use Plan guides future development by designating siting of functionally similar land uses and encourages an organized growth pattern that avoids collocating incompatible uses. The future land use plan seeks to establish land use relationships that reinforce functional compatibility and help minimize internal and external encroachment. The existing land uses and functional relationships at NSWCCD-Olney Support Center are conducive to mission requirements. The five land use categories remain the same in the proposed future land use. The boundaries between various land uses have shifted to set aside additional areas to support future growth of the RDAT&E mission and potential utility requirements. The future land use maintains the Natural Open Space buffer along the eastern, northern, and northwestern boundaries. This designation seeks to maintain the historic separation between the adjacent community agricultural and residential uses. Notably, the Natural Open Space land use represents 65 percent of the total acreage. Figure 14 – Future Land Use shows the proposed future land use plan.

Table 10 – Land Use by Category

Land Use Category	Existing Land Use		Future Land Use	
	Acres	Percent	Acres	Percent
Airfield	2.73	3.54%	2.73	3.54%
Base Support	5.42	7.03%	5.63	7.30%
RDAT&E	6.90	8.95%	28.12	36.46%
Utilities	0.11	0.14%	1.17	1.52%
Natural Open Space	61.96	80.34%	39.47	51.18%

Figure 13 – Existing Land Use

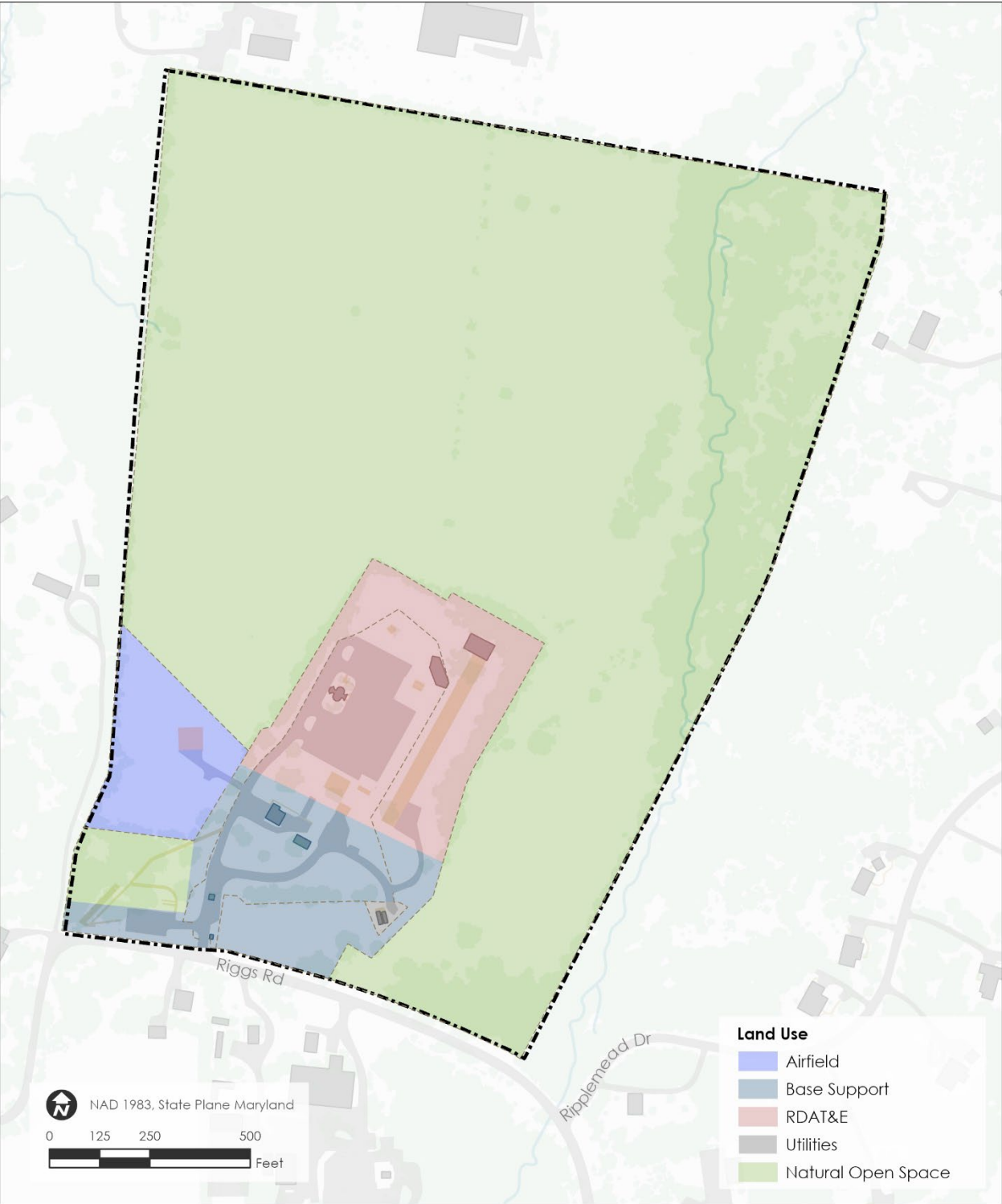
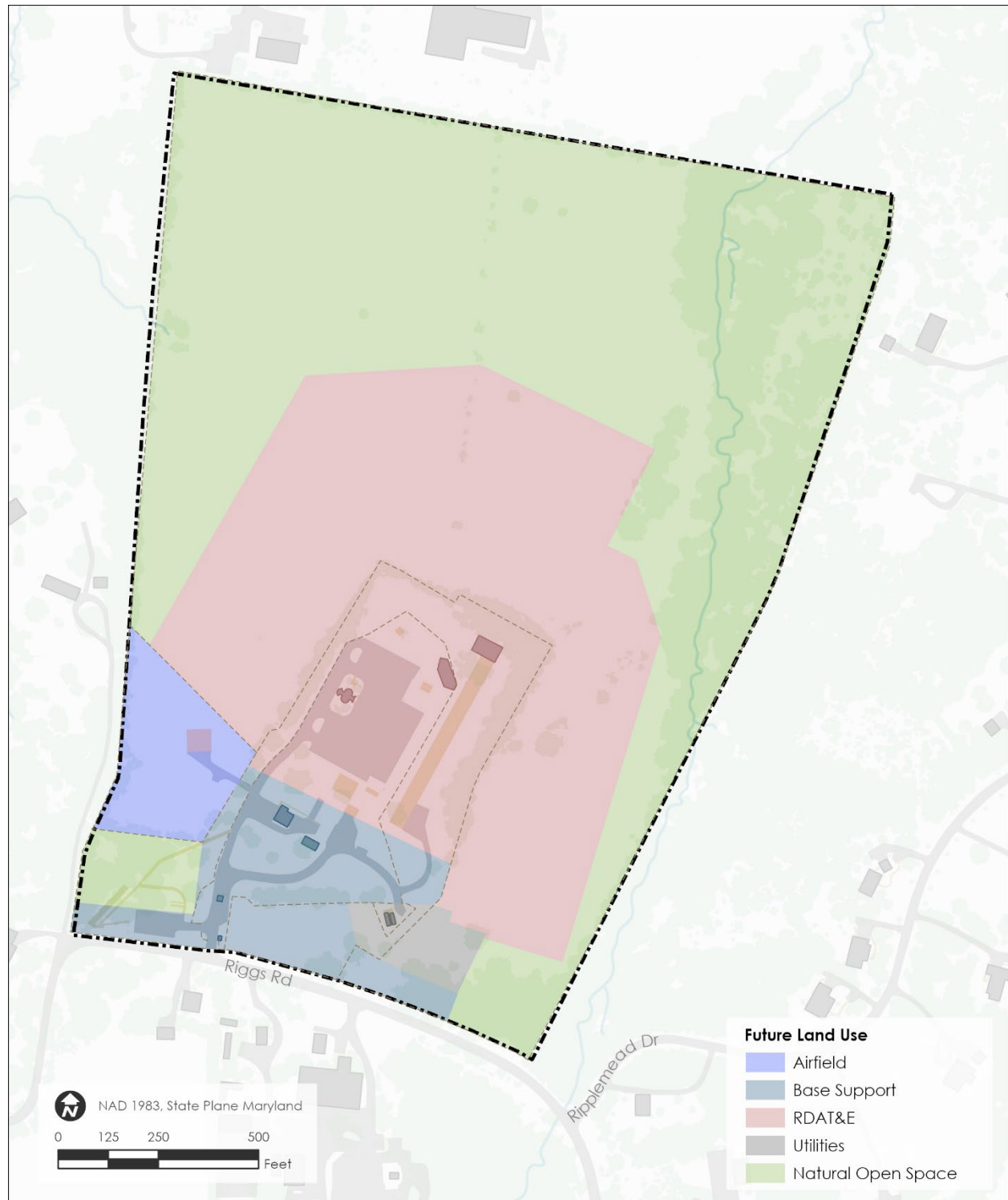


Figure 14 – Future Land Use



7.3 Regulating Plan

Higher-level strategic planning guidelines, future development and redevelopment projects should support facility standardization and site designs that are safe and efficient. Per *UFC 2-100-01 Installation Master Planning*, planning standards should:

- Meet sustainability, severe weather and climate resilience, and energy efficiency requirements.
- Promote visual order and architectural consistency.
- Enhance the natural and man-made environments through consistent architectural themes and standards.
- Improve the functional aspects of the installation.

The design and construction of these facilities must also align with *Facilities Criteria (FC) 2-000-05N Facility Planning Criteria for Navy and Marine Corps Shore Installations*, which identifies specific building and space design requirements by facility use.

7.3.1 Building Envelope Standards

Building envelope standards identify different building types that could be at the installation, depending on future mission requirements. Regulating each of these building types are a set of standards that describe attributes of the building use, dimensions, placement, and other design details that any new development or renovation projects should follow. The Navy has developed standard area requirements and spatial relationships that provide consistency across an installation. The building envelope standards help to define and provide a unified appearance. Proposed new construction and renovation projects should incorporate the following standards, as appropriate:

Building Use

Building use identifies appropriate uses for the ground floor and the upper floor(s) of the facility type. Note: The designed use should

be complementary, encouraging, vertically mixed spaces.

Placement

The envelope requires a specific setback from the roadway, designated by the Required Build-to Line (RBL).

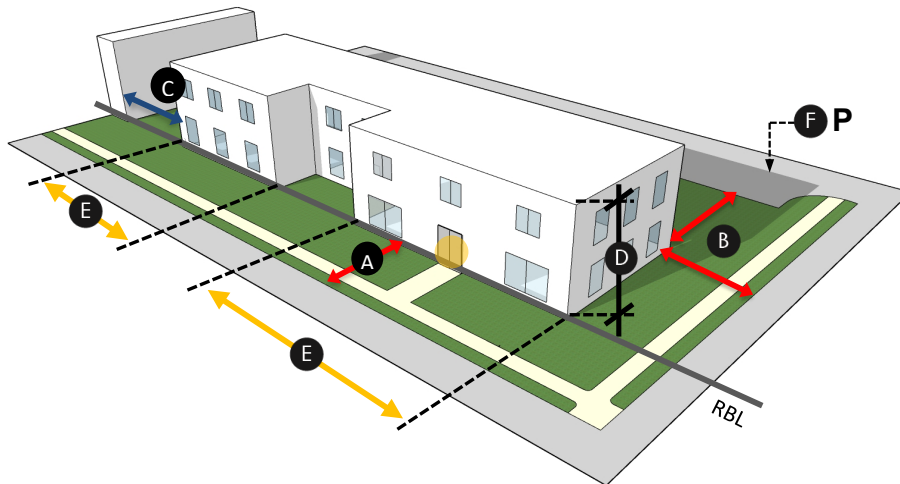
Height

The building standard regulates the maximum number of floors as well as the percentage of building at RBL.

Figure 15 through Figure 17 provide typical building envelope standards for Research Lab, Mission, and Light Industrial buildings.

Research Lab Building Standard

Figure 15 – Research Lab Building Standard



Note: The graphic representation above provides only a conceptual idea of the building standard type and is a guide for interpreting standards set out in the adjacent table.

Graphic Key

	Building		Required Entry Location		Building Height
	Streets/Parking		Required Build-to Line (RBL)		Building Setback
	Sidewalk		Setback from Street, Parking or RBL		Building Frontage
	Lawn				
	Parking Lot				

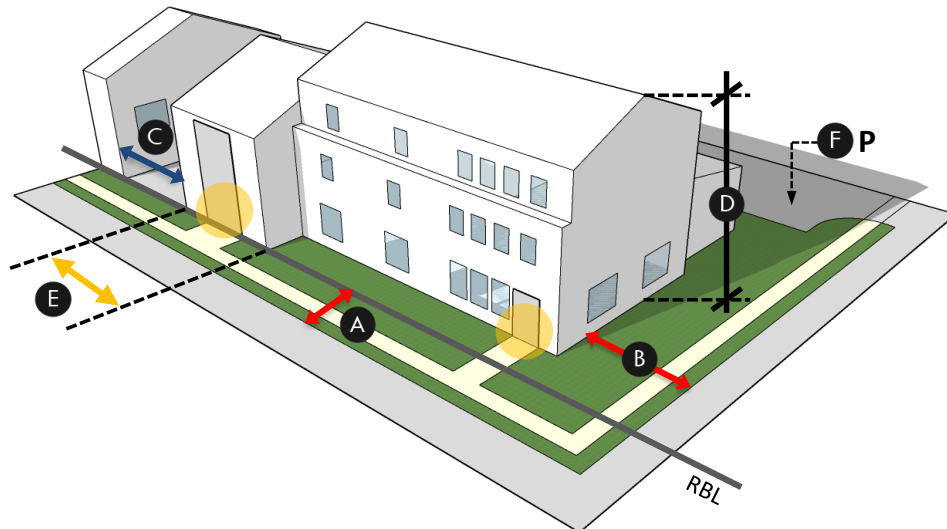
Table 11 – Research Lab Building Standard

Use		
All floors	Research, Office	
Placement		
	RBL maximum setback from roads/parking	36ft (11m)
	Minimum setback from roads/parking	36ft (11m)
	Minimum setback from other buildings	33' (10m)

Height		
	Minimum number of floors	1 floor
	Maximum number of floors	3 floors
	Percent of façade area at RBL	30% minimum
Parking		
	Per NCPC requirements	

Mission Building Standard

Figure 16 – Mission Building Standard



Note: The graphic representation above provides only a conceptual idea of the building standard type and is a guide for interpreting standards set out in the adjacent table.

Graphic Key

	Building		Required Entry Location		Building Height
	Streets/Parking		Required Build-to Line (RBL)		
	Sidewalk		Building Setback		
	Lawn		Setback from Street, Parking or RBL		
P	Parking Lot		Building Frontage		

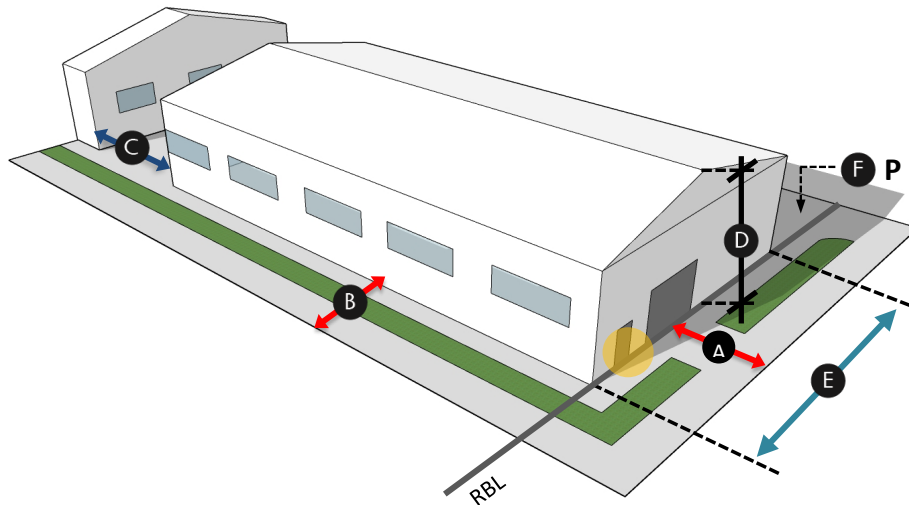
Table 12 – Mission Building Standard

Use		
All floors		Mission
Placement		
A	RBL maximum setback from roads/parking	36ft (11m)
B	Minimum setback from roads/parking	36ft (11m)
C	Minimum setback from other buildings	33' (10m)

Height		
D	Minimum number of floors	1 floor
D	Maximum number of floors	3 floors
E	Percent of façade area at RBL	30% minimum
Parking		
F	Per NCPC requirements	

Light Industrial Building Standard

Figure 17 – Light Industrial Building Standard



Note: The graphic representation above provides only a conceptual idea of the building standard type and is a guide for interpreting standards set out in the adjacent table.

Graphic Key

 Building	 Required Entry Location	 Building Height
 Streets/Parking	 Required Build-to Line (RBL)	
 Sidewalk	 Building Setback	
 Lawn	 Setback from Street, Parking or RBL	
P Parking Lot	 Building Frontage	

Table 13 – Light Industrial Building Standard

Use	
All floors	Industrial
Placement	
A RBL maximum setback from roads/parking	36ft (11m)
B Minimum setback from roads/parking	36ft (11m)
C Minimum setback from other buildings	33' (10m)

Height	
D Minimum number of floors	1 floor
D Maximum number of floors	3 floors
E Percent of façade area at RBL	50% minimum
Parking	
F Per NCPC requirements	

7.3.2 Site Planning Guidelines

Site planning is the arrangement of buildings, roads, parking lots, and open spaces within an installation. All project designs should include security standards and applicable guidelines when siting or constructing new buildings, such as the following:

- Constructing new buildings to be high density, clustered with related existing buildings, and include a pedestrian network to ensure connectivity between buildings.
- Siting buildings to preserve view sheds, where relevant.
- Orienting primary facades to be perpendicular or parallel to the street network.
- Siting buildings to take advantage of solar orientation, wind exposure, and micro-climate conditions.
- Providing parking areas visibly connected with continuous pedestrian pathways to the buildings they serve.
- Ensuring spaces between buildings are functional pedestrian space.

- Establishing a compatible scale among buildings and the spaces defined by those buildings.
- Separating vehicular and pedestrian traffic.

7.4 Streetscape Standards

Given the installation's rural character of development, the main mode of transportation throughout the installation is vehicular. The main design strategy is that the street hierarchy reinforced throughout the installation should enhance both the streetscape and signage. Roadways are categorized as Primary, Secondary, or Tertiary. There are no Primary roads on NSWCCD-Olney Support Center.

Secondary Roads

Secondary roads typically serve a cluster of buildings or a neighborhood and feed into a primary road. They generally accommodate lower traffic volumes and should be designed to facilitate slower driving speeds.

Landscaping with street trees is appropriate around built areas and does not require the same extent as primary roads. Pedestrian connectivity is also important along secondary roads as well, though sidewalks and crosswalks may be narrower. Design

Figure 18 – Secondary Road Streetscape Standards Cross-section



considerations allow for the provision of pedestrian lighting, and sidewalks designed with the larger installation-wide sidewalk network, giving priority to connectivity.

Designs may also allow for provision of sidewalks on both sides of the street. Figure 19 illustrates secondary street standards and Figure 18 illustrates its cross section.

Tertiary Roads

Tertiary roads typically act as access roads to certain buildings or facilities and do not handle large volumes of traffic. The intent of tertiary roads is for primarily vehicular use with a 10 to 12-foot lane going in both directions. In some cases, tertiary roads can be restricted to official vehicles only or used as pedestrian trails. Figure 20 shows the tertiary road standards.

Landscaping along tertiary roadways can help provide additional screening and/or shade.

Figure 19 – Secondary Road Streetscape Standards

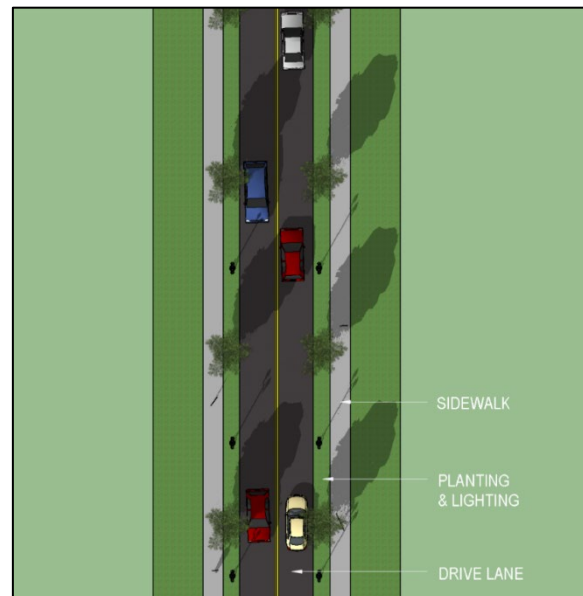


Figure 20 – Tertiary Road Streetscape Standards Cross-section



Parking Lot Standards

Keeping paved areas to a minimum reduces the environmental footprint of the parking areas. Minimal dimensions for parking spaces are 9 x 18 feet, with 24-foot-wide drive aisles. Comply with ADA requirements by providing sufficient accessible parking spaces.

Efforts should be made to retain storm water on-site when possible, including LID strategies like bio-retention areas and pervious pavement. These facilities permit rainwater to percolate on-site, reducing rainwater volumes in sewers and decreasing flooding, and allowing the water to filter through the soil, improving water quality. Bio-retention areas also serve as aesthetic improvements to the site, and may act as wildlife habitats, contributing to the continuity of green spaces throughout the installation. Use of trees to shade parking areas reduces heat island effect and screen parking. Continuous pedestrian pathways should be present throughout parking areas to facilitate safe walking routes. Figure 21 shows the parking lot standards.

7.5 Landscape Standards

Two main goals of landscape architecture design are increasing walkability and sustainability. It is important to ensure that there are safe, accessible, and connected pedestrian routes that provide an alternate mode of mobility. Increasing walkability not only increases public safety but supports better public health outcomes and reduces vehicular trips, which also contributes to the goal of sustainability.

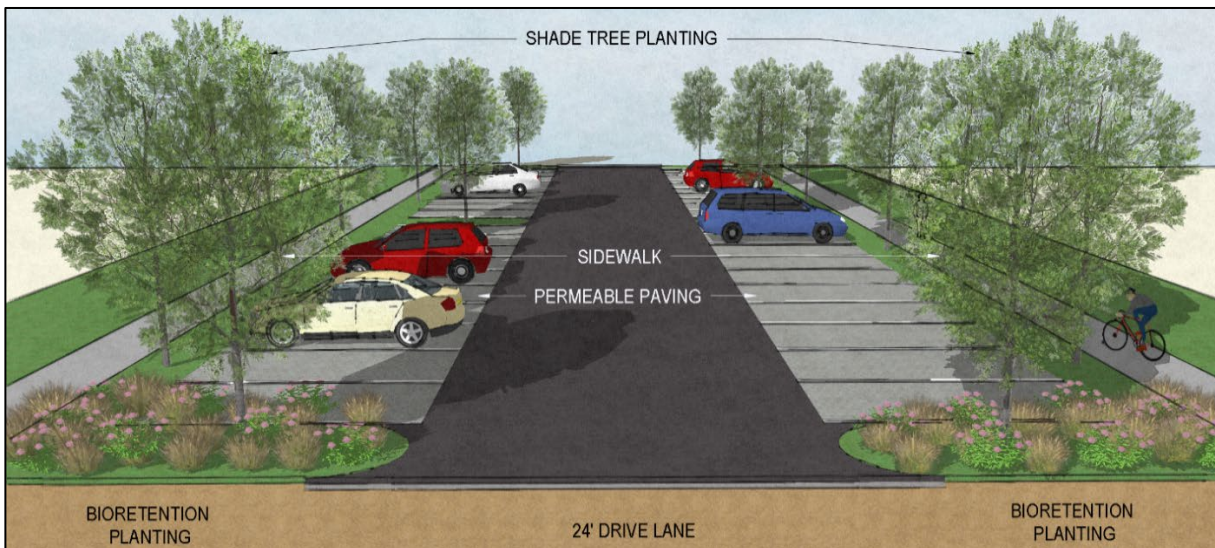
Landscaping should be used to establish spatial hierarchy, define spaces, screen utilities/parking, act as a wind/noise barrier, aid in storm water management, and create visual order and consistency throughout the installation.

Planting trees around buildings and/or along roadways can help provide additional screening and shade.

The Installation should follow the basic landscape design principles found in *UFC 3-201-02: Landscape Architecture, With Change 1* to include the following:

- Use hardy, regionally native and drought-tolerant plant materials when possible.
- Create design solutions that minimize adverse impacts on the natural habitat.

Figure 21 – Parking Lot Standards Cross-section



- Prevent pollution by reducing fertilizer and pesticide requirements and by using integrated pest management techniques, recycling green waste, and minimizing runoff.
- Preserve and enhance existing natural landforms and vegetation.
- Maximize the use of water-efficient plant material.
- Use water-efficient irrigations systems.
- Ensure site and planting promote energy conservation.
- Screen undesirable views and land uses.
- Use mass plantings, berms, groups of trees, and architecturally compatible fencing as screens and buffers.
- Create attractive entries.
- Reduce building mass by creative-sensitive foundation plantings.
- Use site amenities that are durable, well-constructed.
- Design irrigation systems to minimize damage to key components, including sprinkler heads, controllers, and back-flow preventers.

Landscaping also benefits the natural environment. The planting of bio-infiltration systems in parking areas not only creates more pedestrian friendly environments, but also captures storm water to improve water quality, recharge ground water, and reduce storm water runoff. Use this landscaping strategy as appropriate, as development occurs on the installation.

7.6 Resilience Planning

Resilience strategies can improve water quality, and reduce flooding, heat island effect, and air pollution. Incorporate sustainability strategies into facility design by using standards from the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating systems.

There are different LEED requirements for different types of development, but each consists of a checklist of basic prerequisites and building improvements that are eligible to count towards a minimum number of credits.

UFC 1-200-02: High Performance and Sustainable Building Requirements with Change 2 integrates DoD requirements (DoDI 4170.11 and other DoD Policies) with High Performance and Sustainable Building (HPSB) Guiding Principles and industry standards for high performance and sustainable buildings. This UFC is applicable to new construction and comprehensive replacement, and sustainment, restoration, and modernization projects. The UFC focuses on:

- Employing Integrated Design Principles
- Optimizing Energy Performance
- Protecting and Conserving Water
- Enhancing Indoor Environmental Quality
- Reducing Environmental Impact of Materials
- Addressing Risk

The *Energy Policy Act of 2005* and *Energy Independence Security Act of 2007* requires federal agencies to increase efficiency, optimize performance, eliminate unnecessary use of resources, and protect the environment.

Table 14 – Future Development Program

I D	Project Number	
	Project Title	
1	P353	Battery Testing Facility
2	--	Accelerated Corrosion Control Facility
3	--	Install new water line
4	--	Expand Secure Perimeter
5	--	Construct new paved roadway

8 Future Development Illustrative Plan

The Future Development Illustrative Plan incorporates the Preferred Alternative with the site development standards, regulating plan, streetscape, and landscape standards to show the envisioned long-term development for NSWCCD-Olney Support Center. It shows a conceptual view of the proposed physical improvements identified in the Preferred Alternative to address current requirements and capability gaps. f

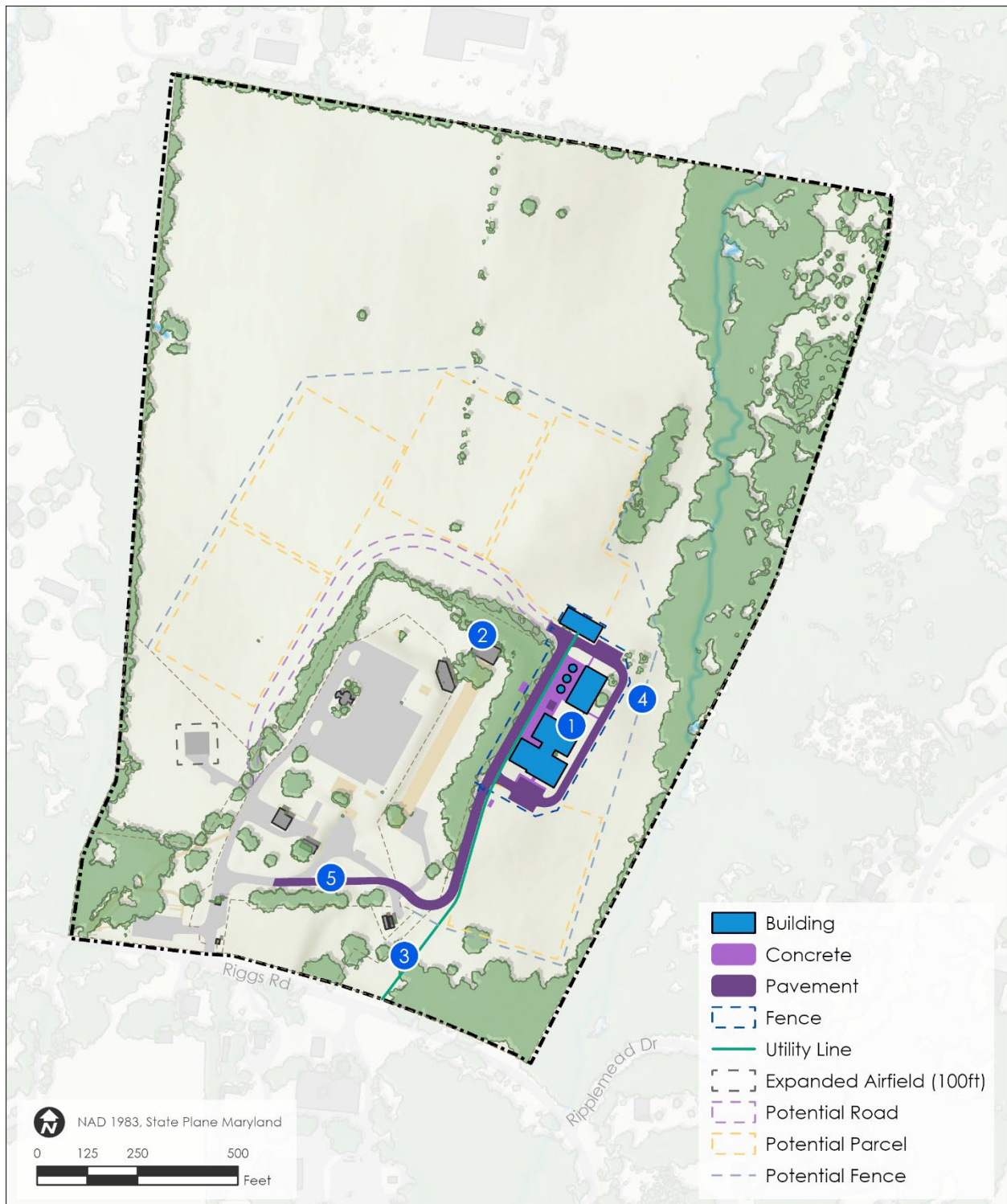
The Illustrative Plan also includes conceptual facilities and projects to accommodate unknown future capacity and/or requirements as shown in Figure 22 – Illustrative Plan.

Each project has an identification number to locate the project on the map. The purpose of the Future Development Plan is to identify locations targeted for known requirements and deconflict project site selections.

The Accelerated Corrosion Control Facility (Project ID 2) is a standalone project. Project IDs 3-5 support the Battery Testing Facility (Project ID 1). Additional future parcel development would not occur until identification of a new mission requirement. If there is a future mission requirement, selection of development parcels would ensure compatibility with existing development and adhere to the standards and guidelines established in the Regulating and Future Land Use Plans.

The NCPC requires an updated submission for any changes, beyond the current Preferred Alternative in this ADP.

Figure 22 – Illustrative Plan



9 Development Program Summary

The Development Program Summary, also referred to as the Capital Investment Plan, outlines an overall strategy for using and investing in real property. It indicates implementation of various elements of the ADP, including rough order of magnitude cost estimates and anticipated funding streams.

The proposed development program categorizes projects into one of three implementation horizons (short-term, mid-term, and long-term) as summarized in Table 15.

Short-Term (0 - 5 Years)

The short-term development program includes current projects, proposed or programmed projects over the next five years, or projects recommended for programming in the next five years.

Mid-Term (6 - 10 Years)

The mid-term development program includes projects for consideration once implementation of the short-term projects occurs. These projects are anticipated to be needed in the near future based on facility age and anticipated life cycles of facilities and systems. Mid-term projects are a high priority and planning for them should begin now.

Long-Term (11 – 20 Years)

The long-term development program identifies projects anticipated within the next 20 years but are not the highest priority. It also identifies projects that require prerequisite actions or longer lead times to prepare.

Project phasing for implementation was determined by stakeholder input received at the Capability Gap Prioritization Meeting and COA Workshop. Stakeholders identified the most critical projects to the mission or essential to improve quality of life for all entities at NSWCCD-Olney Support Center. The phasing plan is flexible. It can adjust to account for changes in funding, priority, and mission, while identifying projects for completion in the near-term to address urgent needs and immediate requirements.

The Development Program contains five projects which are all slated for completion in the short-term. These projects are exclusive of the routine sustainment and modernization program.

There are no known mission requirements that would necessitate additional projects in the mid- or long-term.

ID	Project Number	Project Title	Project Type	Phasing
1	P353	Battery Testing Facility	Construction	Short-Term
2	--	Accelerated Corrosion Control Facility	Construction	Short-Term
3	--	Install new water line	Construction	Short-Term
4	--	Expand Secure Perimeter	Demolition & Construction	Short-Term
5	--	Construct new paved roadway	Construction	Short-Term

The development of this ADP also identified additional studies and plans. These initiatives, shown in Table 16, would assist in effective management of the real property assets and support stewardship of the site.

Table 16 – Recommended Plans and Studies

ID	Action	Project Type
A	Create an Installation Appearance Plan (IAP) specific to NSWCCD-Olney Support Center.	Planning
B	Develop Basic Facility Requirements for NSWCCD Olney Support Center occupants.	Asset Management
C	Create missing GIS data layers and update existing layers.	GeoReadiness Center
D	Conduct a facility systems assessment to update existing building condition ratings.	Asset Management
E	Conduct a study to determine the viable options for meeting DOD energy reduction requirements.	Energy Management

10 Specific Planning and Design Standards

10.1 Installation Appearance Plan

The Installation Appearance Plan (IAP) provides direction for designing and developing projects. The guidelines seek to conserve, protect, and enhance the positive attributes of the installation, while also improving, unifying, and mitigating negative attributes.

The Washington Navy Yard has an IAP that focuses on five appearance issues: landscape architecture, entry gate design, signage, paint color schemes, and architecture. The paint color palette reflects the standard palette of Pantone colors set by the Navy's Installation Appearance Guide. As NSWCCD-Olney Support Center is under the command structure of NSA Washington, the IAP would be applicable to future development on the site.

As previously indicated, NSWCCD-Olney Support Center supports Naval Surface Warfare Center Carderock Division located on NSF Carderock. NSF Carderock also has an IAP. The IAP focuses on landscape architecture, site planning, architecture, signage, and sustainability. Due to

complementary mission sets, the NSF Carderock IAP is also appropriate for future development onsite.

Evaluation of both IAPs should identify applicability and appropriate site-specific modifications due to the rural nature of the site location.

10.2 MDE Tier II Antidegradation Review

Proposed development at NSWCCD-Olney Support Center needs to assess applicability of MDE Tier II Antidegradation Review. The Tier II review may affect project site location and civil design as follows:

- Potential relocation of the project site to minimize impacts and reduce encroachment onto waterway buffers,
- Reduction of impervious surfaces, and
- Incorporation of environmental site design measures to mitigate potential impacts to water quality. Table 17 provides additional details on the Tier II review processes and websites for additional information.

Table 17 – Tier II Antidegradation Review Resources

Type of Review	Review Process Details
MDE Tier II Review	This website provides an overview of the MDE Tier II Review process, general overview, and contacts: https://mde.maryland.gov/programs/Water/TMDL/WaterQualityStandards/Pages/Tier-II-Review.aspx#:~:text=The%20Tier%20II%20review%20is,Nontidal%20Wetlands%20and%20Waterways%20Program). Overall Review Process 1. Step 1: Identify Impacts 2. Step 2: Avoidance Alternatives Analysis 3. Step 3: Minimize Alternatives Analysis 4. Step 4: Social and Economic Justification for Unavoidable Impacts

Table 17 – Tier II Antidegradation Review Resources

Type of Review	Review Process Details
Tier II Review Process for Coverage under the “General Permit for Stormwater Associated with Construction” (i.e., NPDES Permit)	This process would be required if construction LOD is 1.00 acre or greater. If a Joint Federal/State Application permit is required, this Tier II Review will be followed: https://mde.maryland.gov/programs/water/TMDL/WaterQualityStandards/Pages/Tier-II-General-Construction-Permit.aspx Note: This process requires additional coordination with MDE for the Tier II Review, as well as an additional 2-4 week Permit Review turnaround time just for a “No Additional Review Required” determination.
Tier II Review Process for “Nontidal Wetlands and Waterways Construction” Permits	If a Joint Federal/State Application permit is required, this Tier II Review will be followed: https://mde.maryland.gov/programs/water/TMDL/WaterQualityStandards/Pages/Tier-II-Wetlands-Waterways.aspx • This process would be required if the wetlands or buffer is impacted. • The critical area Buffer is 100 feet from stream + (On sites with steep slopes of 15 percent or greater, the Buffer must be expanded four feet for every one percent of slope, or to the top of the slope, whichever is greater).
Joint Federal/State Application for the Alteration of any Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland” Application	Non-Tidal Wetlands & Waterways Permit Portal, including additional information, review overview, and contacts: https://onestop.md.gov/licenses/non-tidal-wetlands-waterways-permit-5d15409d54f24d03e9997b8e Nontidal Wetlands Permit Guide, including submission and coordination requirements: https://mde.maryland.gov/programs/Permits/Documents/2008permitguide/WMA/3.19.pdf • <i>When is it required?</i> When any development is proposed within the stream or its buffer • <i>Turnaround Time?</i> 6 months for minor projects, 12 months for major projects. Joint Permit Application (fillable): https://mde.maryland.gov/programs/water/WetlandsandWaterways/PermitsandApplications/Documents/www.mde.state.md.us/assets/document/permit/alter.pdf

Table 17 – Tier II Antidegradation Review Resources

Type of Review	Review Process Details
Maryland Water Resources Registry:	https://watershedresourcesregistry.org/map/?config=stateConfigs/maryland.json
Maryland Tier II Waterways Interactive Map Viewer	https://mdewin64.mde.state.md.us/WSA/TierIIWQ/index.html

10.3 Guidelines for Environmental Management and Development in Montgomery County

Future development onsite must adhere to the M-NCPPC *Guidelines for Environmental Management and Development in Montgomery County*, which include guidelines for watershed management and protection. These guidelines include stream buffers in the Patuxent PMA, which cover most of the site. More information and a complete copy of the guidelines can be found at:

<https://montgomeryplanning.org/planning/environment/environmental-guidelines-reports/environmental-guidelines/>

10.4 Conceptual Stormwater Management Calculations

For conceptual planning purposes, stormwater management calculations make assumptions for future building construction. Approximately 1,855 SF of microbioretentions surface area could treat one acre (43,560 SF) of new impervious area.

If, or when additional stormwater management is required, calculations will include the actual building and site design requirements.

Treatment Volume per SF of Proposed Impervious

According to the MDE SWM Calculator, one acre of proposed impervious surface would require approximately 3,450 CF, based on the following inputs:

- Study area = 1 acre
- Existing Impervious = 0.0 acre

- Proposed Impervious = 1.0 acre (New Development)
- Resulting ESD Volume Required = 3,449 CF

Potential ESD Treatment Volume per SF BMP

Best practices for conceptual stormwater management calculations use conservative values for planning and estimating. This approach allows for the most “wobble room” in assumptions. Using minimum amounts, instead of the maximum amounts prevents basing budgets and site layout/design on unachievable maximum values for varying reasons (unknown utilities, poor calculations, etc.).

The following scenario builds in the assumptions listed below and a Void Ratio of 40 percent:

- Ponding = 0.50 feet
- Mulch = 0.25 feet x 0.40 void ratio
- Media = 2.0 feet x 0.40 void ratio
- Pea Gravel = 0.33 feet x 0.40 void ratio
- Gravel above Underdrain = 0.83 feet x 0.40 void ratio

This scenario yields a Total Estimated Treatment Volume of 1.86 cubic feet / per SF of Micro-bioretenion.

As stated previously, this scenario represents a conservative estimate, which uses the minimum values recommended for planning level purposes. Use of additional ponding depth and media depth would increase this number.

Required SF of BMP for 1 Acre of Proposed Impervious

Based on the assumptions and calculations detailed above, one acre of new, impervious area would require approximately 3,450 CF of ESD Volume of Treatment. This could be treated with approximately $(3,450 / 1.86) = 1,855$ SF of BMP surface area.

Low Impact Development

As the site is developed, incorporation of LID for SWM is strongly recommended to manage runoff while preserving the site's natural hydrologic function, maintaining existing drainage patterns, and thoughtfully integrating proposed impervious areas to harmonize with existing site conditions and constraints.

For each proposed parcel, ranging between 2- and 3-acres, SWM is anticipated to be included as part of the concept design. For each acre of total impervious area within a developed parcel, an estimated 1,855 SF of a SWM Best Management Practice (BMP) facility, such as a bioretention pond, is required. Incorporating LID to decentralize SWM practices is recommended and can be achieved by increasing the number of proposed trees; incorporating micro bioretention facilities within parking lot landscape areas and other open spaces; implementing practices such as rainwater harvesting, green roofs, vegetated swales, and infiltration facilities, such as pervious pavement. This approach reduces runoff volume and peak flows, improves water quality, and helps reduce the size of the primary SWM facility.

To the greatest extent feasible, LID should be applied across the site using a treatment train approach that combines multiple small-scale practices rather than relying solely on a centralized, end of pipe facility. The location and size of each BMP will depend on the proposed site layout, topography, and the total impervious area treated by each BMP.

10.5 MDE and DNR Construction Requirements and Contacts

Any future construction or development on the site should adhere to the following MDE and DNR requirements. Appropriate references and contacts are provided.

If asbestos is suspected to be present in any portion of a structure that will be renovated/demolished, then the applicant should contact the Community Environmental Services Program, Air and Radiation Management Administration at (410) 537-3215 to learn about the State's requirements for asbestos handling.

Construction, renovation and/or demolition of buildings and roadways must be performed in conformance with state regulations pertaining to 'Particulate Matter from Materials Handling and Construction' (COMAR 26.11.06.03D), requiring that during any construction and/or demolition work, reasonable precautions must be taken to prevent particulate matter, such as fugitive dust, from becoming airborne.

During the duration of the project, soil excavation/grading/site work will be performed; there is a potential for encountering soil contamination. If soil contamination is present, a permit for soil remediation is required from MDE's Air and Radiation Management Administration. Please contact the New Source Permits Division, Air and Radiation Management Administration at (410) 537-3230 to learn about the State's requirements for these permits.

Above ground or underground petroleum storage tanks must be installed and maintained in accordance with applicable State and federal laws and regulations. Underground storage tanks must be registered, and the installation must be conducted and performed by a contractor certified to install underground storage tanks by the Land and Materials Administration in accordance with COMAR 26.10. Contact the Oil Control Program at (410) 537-3442 for additional information.

If the proposed project involves demolition – Any above ground or underground petroleum storage tanks that may be on site must have contents and tanks along with any contamination removed. Please contact the Oil Control Program at (410) 537-3442.

Any solid waste including construction, demolition and land clearing debris, generated from the subject project, must be properly disposed of at a permitted solid waste acceptance facility, or recycled if possible. Contact the Solid Waste Program at (410) 537-3315 for additional information regarding solid waste activities and contact the Resource Management Program at (410) 537-3314.

The Solid Waste Program should be contacted directly at (410) 537-3315 by those facilities which generate or propose to generate or handle hazardous wastes to ensure these activities are being conducted in compliance with applicable state and federal laws and regulations. The program should also be contacted prior to construction activities to ensure that the treatment, storage or disposal of hazardous wastes and low-level radioactive wastes at the facility will be conducted in compliance with applicable state and federal laws and regulations.

If rehabilitation, redevelopment, revitalization, or property acquisition of commercial, industrial property is proposed, MDE's Brownfields Site Assessment and Voluntary Cleanup Programs (VCP) can provide valuable assistance. These programs involve environmental site assessment in accordance with accepted industry and financial institution standards for property transfer. For specific information about these programs and eligibility, please contact the Land Restoration Program at (410) 537-3437.

Borrow areas used to provide clean earth back fill material may require a surface mine permit. Disposal of excess cut material at a surface mine may require site approval. Contact the Mining Program at (410) 537-3557.

11 Abbreviations and Acronyms

This document uses the following abbreviations and acronyms.

ADP	Area Development Plan	LED	Light-emitting Diode
BMP	Best Management Practices	LEED	Leadership in Energy and Environmental Design
CNO	Chief of Naval Operations	LID	Low Impact Development
COA	Course of Action	MBR	Membrane Bioreactor
CPLO	Community Planning and Liaison Officer	MDE	Maryland Department of the Environment
DOD	Department of Defense	MHT	Maryland Historical Trust
DODI	Department of Defense Instruction	MIDI	Multi-Indicator Drought Index
ESD	Environmental Site Design	MILCON	Military Construction
EV	Electric vehicle	M-NCPPC	Maryland-National Capital Park and Planning Commission
FAA	Federal Aviation Administration	NAVFAC	Naval Facilities Engineering Systems Command
FC	Facilities Criteria	NCPC	National Capital Planning Commission
FEMA	Federal Emergency Management Agency	NPDES	National Pollutant Discharge Elimination System
FIRM	Flood Insurance Rate Map	NSA	Naval Support Activity
GOV	Government Owned Vehicle	NSF	Naval Support Facility
GRC	GeoReadiness Center	NSWCCD	Naval Surface Warfare Center Carderock Division
GSA	General Services Administration	Pepco	Potomac Electric Power Company
HPSB	High Performance and Sustainable Building	PMA	Primary Management Area
IAP	Installation Appearance Plan	POI	Point of Investigation
IDP	Installation Development Plan	RBL	Required Build-to Line
iNFADS	Internet Navy Facility Assets Data Store	RDAT&E	Research, Development, Acquisition, Test, and Evaluation
INRMP	Integrated Natural Resources Management Plan	RPA	Real Property Asset
		SCA	Shore Capability Areas

SHPO	State Historic Preservation Office
SWM	Stormwater Management
TMP	Transportation Management Plan
UFC	Unified Facilities Criteria
UFS	Unified Facilities Supplement
W&S	Water and Sewer Plan
WSSC	Washington Suburban Sanitary Commission
WWTP	Wastewater Treatment Plant

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								NAR	No Action Required
								DI	Discussion Item
								IC	Incorporate Comment
								CRI	Comment Resolved, Incorporate
								AIN	Additional Information Needed
1		NCPC	p.6	Commission support the following elements of the preferred alternative: Focusing new development at the southern end of the site and avoiding sprawling, large footprint development in areas that are heavily wooded or near the stream; • Reuse of existing parking and facilities to support new developments; and • Addition of new pedestrian paths to access the development.	• These elements of the alternative are highlighted in the document as favored by NCPC. First bullet included in Section 4.6 Preferred Alternative. "The National Capital Planning Commission supports elements of the Preferred Alternative such as new development concentrated at the southern end of the site, while avoiding large, sprawling footprints in heavily wooded areas or near the unnamed tributary. " Second bullet included in Section 5 Circulation and Parking Plan. "The National Capital Planning Commission supports reuse of existing parking and facilities to support new development." Third bullet included in Section 6.1 Pedestrian Plans. "The National Capital Planning Commission supports new pedestrian pathways."	Y	IC	Incorporate Comment	
2		NCPC	p.6	Commission finds that if in the future, additional development capacity is needed above the areas identified in the preferred alternative, the applicant will need to prepare an updated master plan for Commission review.	Statement added to Section 8 Future Development Illustrative Plan. "NCPC requires an updated submission for any changes, beyond the current Preferred Alternative in this ADP."	Y	IC	Incorporate Comment	
3		NCPC	p.6	Commission recommend the final master plan include a comprehensive stormwater management approach that utilizes Low Impact Development (LID) techniques and other approaches that can be incorporated into future project implementation.	Separate subsection added to 10.4 Conceptual Stormwater Management Calculations titled Low Impact Development. Additional references to LID in document can be found on pages 17, 39, and 48. Broader discussion of stormwater management is in Section 3.2.5 Stormwater System and 10.4 Conceptual Stormwater Management Calculations.	Y	IC	Incorporate Comment	
4		NCPC	p.6	Commission encourages the applicant to consider identifying future tree planting areas around the site that can help provide additional screening and shade such as along driveways and around future buildings.	Statements added to Section 7.4 Streetscape Standards, subsection Tertiary Roads "Landscaping along tertiary roadways can help provide additional screening and/or shade." and to Section 7.5 Landscape Standards "Planting trees around buildings and/or along roadways can help provide additional screening and shade." Trees added to Figure 20 - Tertiary Road Streetscape Standards Cross-section.	Y	IC	Incorporate Comment	
5		NCPC	p.7	Commission supports the applicant’s transportation strategy to reuse existing parking for new buildings and implement transportation demand management strategies when employment on site reaches a critical mass.	Statement added to Section 5 Circulation and Parking Plan "The National Capital Planning Commission supports reuse of existing parking and facilities to support new development."	Y	IC	Incorporate Comment	
6		NCPC	p.8	Commission request the applicant consider the inclusion of trees along pathways and driveways to help provide shade and beautify the site.	Statements added to Section 7.4 Streetscape Standards, subsection Tertiary Roads "Landscaping along tertiary roadways can help provide additional screening and/or shade." and to Section 7.5 Landscape Standards "Planting trees around buildings and/or along roadways can help provide additional screening and shade." Trees added to Figure 20 - Tertiary Road Streetscape Standards Cross-section.	Y	IC	Incorporate Comment	
7		NCPC	p.9	Commission recommends the applicant consider the comments received in the preparation of the final master plan and continue to work with applicable stakeholders, such as Montgomery County, as the master plan is realized.	As noted in Section 2.7 Interagency Coordination this project requires ongoing coordination with other agencies. List of reviewing agencies as part of the NCPC review process added to Section 2.7.2. Applicant appreciates input and review comments submitted on Draft Plan. Refer to comment responses to comments received from other reviewing agencies.	Y	IC	Incorporate Comment	

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ID	Organization	Page #/Figure #	Reviewer's Comment	Response to Comment	Completed Y/N	CODE ACTION	
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						CRI	Comment Resolved, Incorporate
						AIN	Additional Information Needed
1	Maryland Department of Environment	p.2	If the applicant suspects that asbestos is present in any portion of the structure that will be renovated/demolished, then the applicant should contact the Community Environmental Services Program, Air and Radiation Management Administration at (410) 537-3215 to learn about the State's requirements for asbestos handling	Subsection added to Section 10 Specific Planning and Design Standards - subsection 10.5 MDE and DNR Construction Requirements and Contacts	Y	IC	Incorporate Comment
2	Maryland Department of Environment	p.2	Construction, renovation and/or demolition of buildings and roadways must be performed in conformance with State regulations pertaining to ‘Particulate Matter from Materials Handling and Construction’ (COMAR 26.11.06.03D), requiring that during any construction and/or demolition work, reasonable precaution must be taken to prevent particulate matter, such as fugitive dust, from becoming airborne.	Subsection added to Section 10 Specific Planning and Design Standards - subsection 10.5 MDE and DNR Construction Requirements and Contacts	Y	IC	Incorporate Comment
3	Maryland Department of Environment	p.2	During the duration of the project, soil excavation/grading/site work will be performed; there is a potential for encountering soil contamination. If soil contamination is present, a permit for soil remediation is required from MDE's Air and Radiation Management Administration. Please contact the New Source Permits Division, Air and Radiation Management Administration at (410) 537-3230 to learn about the State's requirements for these permits.	Subsection added to Section 10 Specific Planning and Design Standards - subsection 10.5 MDE and DNR Construction Requirements and Contacts	Y	IC	Incorporate Comment
4	Maryland Department of Environment	p.2	Any above ground or underground petroleum storage tanks, which may be utilized, must be installed and maintained in accordance with applicable State and federal laws and regulations. Underground storage tanks must be registered and the installation must be conducted and performed by a contractor certified to install underground storage tanks by the Land and Materials Administration in accordance with COMAR 26.10. Contact the Oil Control Program at (410) 537-3442 for additional information.	Subsection added to Section 10 Specific Planning and Design Standards - subsection 10.5 MDE and DNR Construction Requirements and Contacts	Y	IC	Incorporate Comment
5	Maryland Department of Environment	p.2	If the proposed project involves demolition – Any above ground or underground petroleum storage tanks that may be on site must have contents and tanks along with any contamination removed. Please contact the Oil Control Program at (410) 537-3442 for additional information	Subsection added to Section 10 Specific Planning and Design Standards - subsection 10.5 MDE and DNR Construction Requirements and Contacts	Y	IC	Incorporate Comment
6	Maryland Department of Environment	p.2	Any solid waste including construction, demolition and land clearing debris, generated from the subject project, must be properly disposed of at a permitted solid waste acceptance facility, or recycled if possible. Contact the Solid Waste Program at (410) 537-3315 for additional information regarding solid waste activities and contact the Resource Management Program at (410) 537-3314 for additional information regarding recycling activities.	Subsection added to Section 10 Specific Planning and Design Standards - subsection 10.5 MDE and DNR Construction Requirements and Contacts	Y	IC	Incorporate Comment
7	Maryland Department of Environment	p.2	The Solid Waste Program should be contacted directly at (410) 537-3315 by those facilities which generate or propose to generate or handle hazardous wastes to ensure these activities are being conducted in compliance with applicable State and federal laws and regulations. The Program should also be contacted prior to construction activities to ensure that the treatment, storage or disposal of hazardous wastes and low-level radioactive wastes at the facility will be conducted in compliance with applicable State and federal laws and regulations.	Subsection added to Section 10 Specific Planning and Design Standards - subsection 10.5 MDE and DNR Construction Requirements and Contacts	Y	IC	Incorporate Comment
8	Maryland Department of Environment	p.2	The proposed project may involve rehabilitation, redevelopment, revitalization, or property acquisition of commercial, industrial property. Accordingly, MDE's Brownfields Site Assessment and Voluntary Cleanup Programs (VCP) may provide valuable assistance to you in this project. These programs involve environmental site assessment in accordance with accepted industry and financial institution standards for property transfer. For specific information about these programs and eligibility, please contact the Land Restoration Program at (410) 537-3437.	Subsection added to Section 10 Specific Planning and Design Standards - subsection 10.5 MDE and DNR Construction Requirements and Contacts	Y	IC	Incorporate Comment
9	Maryland Department of Environment	p.3	Borrow areas used to provide clean earth back fill material may require a surface mine permit. Disposal of excess cut material at a surface mine may require site approval. Contact the Mining Program at (410) 537-3557 for further details.”	Subsection added to Section 10 Specific Planning and Design Standards - subsection 10.5 MDE and DNR Construction Requirements and Contacts	Y	IC	Incorporate Comment

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						NAR	No Action Required
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10	Department of Natural Resources	p.3	The North and Northeast part of the property fall within two Sensitive Species Project Review Areas for federally listed rare, threatened, or endangered species. For work within these areas we ask that coordination with MD Department of Natural Resources Wildlife and Heritage Service occur. The exact extent of these areas can be found using the ‘MDDNR Aquatic Resources Pre-Screening Tool’ found at https://maryland.maps.arcgis.com/apps/webappviewer/index.html?id=1c1095e641c541d8aa6588ef6c1b23c8 .”	Text added to Section 3.4.1 Natural Resource Preservation "According to the Maryland Department of Natural Resources, the north and northeast portions of the property fall within two Sensitive Species Project Review Areas for federally listed rare, threatened, or endangered species; refer to Figure 7. Work within these areas requires coordination with the Marylan Department of Natural Resources Wildlife and Heritage Service." Sensitive Species area added to Figure 7 - Environmental Constraints, as well as incorporated into Figure 8 Combined Constraints.	Y	IC	Incorporate Comment
11	Maryland Historical Trust	p.3	MHT's response is contingent on the completion of a Phase I archaeological survey and the receipt and review of the Phase I archaeological survey report indicated in section 3.4.2 of the attached Area Development Plan. The Navy should fulfill all of its Section 106 requirements through direct consultation with MHT (the Maryland SHPO). We look forward to continued consultation on this project, and the upcoming Phase I archaeological survey results. (BJS/202600034)”	Updated language added to Section 3.4.2 Cultural Resource Preservation and Section 3.4.3 Historic Resource Preservation regarding status of Phase 1 and Phase 2 of the archaeological studies on site.	Y	IC	Incorporate Comment
12	Maryland Department of Environment	p.4	On page 2, the text indicates a potential need to increase the capacity of the Wastewater Treatment Facility (WWTP). The Support Center should work with the County to update the Montgomery County Comprehensive/Master Water and Sewer Plan (W&S Plan) to indicate the additional needed capacity and the flow amount of that capacity prior to either a request to increase the discharge permit or a MDE construction permit for an expanded WWTP. If the W&S Plan is not amended, applications, such as construction permits, will be found inconsistent with the W&S Plan and delay the project	Introductory paragraph added to Section 4.5 Planning Assumptions for WWTP " NSWCCD - Olney Support Center should work with Montgomery County to update the Montgomery County Comprehensive/Master Water and Sewer Plan (W&S Plan) to indicate the additional needed capacity and the flow amount of that capacity prior to either a request to increase the discharge permit or a MDE construction permit for an expanded WWTP. If the W&S Plan is not amended, applications, such as construction permits, will be found inconsistent with the W&S Plan and delay the project."	Y	IC	Incorporate Comment
13	Maryland Department of Planning	p.2	The draft area development plan appears consistent with Maryland's Sustainable Growth Principles, as it includes multiple strategies to advance resilience and sustainability, including an analysis of impacts from climate change. It also proposes minimizing the size of parking spaces and using Low Impact Development methods.”	Statement of consistency added to Section 4.6 Preferred Alternative "The Maryland Department of Planning finds the Preferred Alternative consistent with Maryland's Sustainable Growth Principles, as it includes multiple strategies to advance resilience and sustainability, including an analysis of impacts from climate change."	Y	IC	Incorporate Comment

Transportation Management Plan – Public Version

Naval Surface Warfare Center,
Carderock Division Olney Support Center

Prepared for:



Naval Facilities Engineering Command Washington

Prepared by:



AECOM-Baker-Cardno NAVFAC Atlantic Planning Joint Venture

July, 2026

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1. Introduction

Purpose Statement

The purpose of the Naval Surface Warfare Center Carderock Division (NSWCCD) Olney Support Center Transportation Management Plan (TMP) is to support development by preserving existing capacity while implementing travel demand management (TDM) strategies as the site grows to accommodate currently unknown future NSWCCD requirements.

Goals

Goal 1: Support development. As NSWCCD-Olney Support Center develops to support NSWCCD requirements, the internal transportation network should support efficient, compact growth.

- *Objective 1: Internal Circulation.* Create a ring road that accesses all future development sites and allows large truck deliveries to maneuver easily.
- *Objective 2: Pedestrian Network.* Create a safe network for pedestrian movement between the central parking lot and future developments.

Goal 2: Preserve parking capacity. New developments at NSWCCD-Olney Support Center should use the central parking lot to meet National Capital Planning Commission (NCPD) parking maximums over time.

- *Objective 1: Preserve Parking Capacity.* New developments at NSWCCD-Olney Support Center should provide parking for central staff and handicap parking for each facility and use the central parking lot to meet the demands for visitor and overflow parking. The central parking lot will be utilized to meet occupancy demands for Building 1, conference attendees for the conference facilities within Bldg. 1, and provide visitor and overflow parking for future occupancy on the entire NSWCCD-Olney Support Center site.
- *Objective 2: Consolidate New Parking.* New outlying buildings should be positioned with combined parking lots for immediate staff situated between the new facilities. Walkways should be provided from these parking lots to the central parking lot for visitor and overflow parking.
- *Objective 3: Development Access.* In the planning stage, new buildings should be sited to minimize the distance between the building's entrance and the central parking lot.

Goal 3: Implement TDM as the site grows. As NSWCCD-Olney Support Center grows to support more daily employees, TDM strategies should be implemented to ensure consistency with the Transportation Element of NCPD's Comprehensive Plan for the National Capital.

- *Objective 1: Employee Transportation Coordinator.* NSWCCD-Olney Support Center should establish an employee transportation coordinator (ETC) to monitor employee commuting habits and implement TDM strategies.
- *Objective 2: Monitor Employee Origins.* NSWCCD-Olney Support Center should monitor the home location of employees to determine when carpooling, vanpooling, or shuttling may become feasible.

2. Existing and Planned Transportation Systems

Site Access

NSWCCD-Olney Support Center is located in rural Montgomery County, Maryland. The closest incorporated town is Laytonsville and the closest city is Gaithersburg. Access to the site will almost always require using either Olney Laytonsville Road, Damascus Road/New Hampshire Avenue, or Georgia Avenue for part of the trip. Direct site access is on Riggs Road – an unstriped two-lane road with a 30-miles-per-hour speed limit. Riggs Road is rural in design and follows area topography, leading to winding conditions with occasional blind hills and turns. Riggs Road provides direct access to multiple residential properties, farmland, a landscaping company, a small Army National Guard site, and NSWCCD-Olney Support Center.

Currently, NSWCCD-Olney Support Center cannot be accessed directly by transit. While there is a shared use path connecting Laytonsville to Riggs Road alongside of Olney Laytonsville Road, Riggs Road itself has no pedestrian accommodations. The design of this road could present potential safety issues to pedestrians walking along it. The closest bus lines are Montgomery County Department of Transportation's (MCDOT) 90 and 53. The 90's Woodfield Road/East Village Avenue stop and the 53's Olney Mill Road/Olney Laytonsville Road stop are both a seven-minute drive, 20-minute bike ride, and hour-and-a-half walk from NSWCCD-Olney Support Center. While the bike ride is not prohibitively far, the combination of distance, topography, and rural road conditions would make this option unappealing to all but the most experienced cyclists. The site is also far removed from reasonable Metro and MARC access, being a 20-minute drive from the Shady Grove Station (Metro), a 25-minute drive from the Rockville Station (Metro and MARC), and a 30-minute drive from the Glenmont Station (Metro). The Maryland Department of Transportation's commuter bus lines are also far from the site, with western Montgomery County lines being routed on I-270.

Employee Commutes

Alternatives to personal vehicle commutes are nonexistent. While vanpooling and carpooling programs are traditionally implemented to solve this issue, the homes of NSWCCD-Olney Support Center employees are geographically isolated from each other. Because of a lack of alternatives and employee isolation, all NSWCCD-Olney Support Center employees currently commute to work alone and are expected to continue to do so until the site has enough employees to enable carpooling or vanpooling. Chapter 3 provides more details on commuting patterns. Currently, alternative work schedules are available for employees. This program is a promising strategy for reducing the site's impact on the local transportation network as the site grows.

Local Transportation Planning

The Maryland Department of Transportation, WMATA, and Montgomery County have no plans to expand transit to NSWCCD-Olney Support Center. Montgomery County's 2018 *Bicycle Master Plan*, if fully implemented, would create an extensive network of bicycle infrastructure around the site. The most significant project would be the development of a trail along the County's Utility Corridor #2 (see Figure 1). This planned route connects West Laurel in Prince George's County to Gaithersburg while passing through Burtonsville, Brookeville, and Montgomery Village. NSWCCD-Olney Support Center would be about a ten-minute bike ride from this proposed bicycle route's entrances on Olney Laytonsville Road and Zion Road. However, this route is classified as a "future bikeway," which means it

is not prioritized for construction within the 25-year life of the 2018 *Bicycle Master Plan*. The plan does propose bikeable shoulders on Olney Laytonsville Road that would connect Riggs Road to Olney Mill Road, where transit is available. This is a Tier 4 bikeway, meaning that it should be completed within the life of the plan but is the lowest priority. Figure 2 depicts the different priority tiers of the *Bicycle Master Plan*.

Local Land Use Planning

The site is surrounded by agricultural and low-density residential land uses. Most land in the area is zoned as “Agricultural Reserve,” which is intended to conserve agrarian uses but also allows single-family homes on large lots. There are no plans to change the land use or zoning of the area. On the eastern side of the installation boundary, there are eight undeveloped lots that could potentially host single family homes in the future. The intention to preserve agriculture and low-density housing means that the area will likely remain a low priority for transit and bicycle/pedestrian improvements for the foreseeable future. Nearby Laytonsville has a higher-than-average density for the area, but outside of the historic area, housing in Laytonsville maintains a very low-density development pattern.

Figure 1: Proposed Trail on Utility Corridor #2 (Notional) from the Montgomery County Bicycle Master Plan

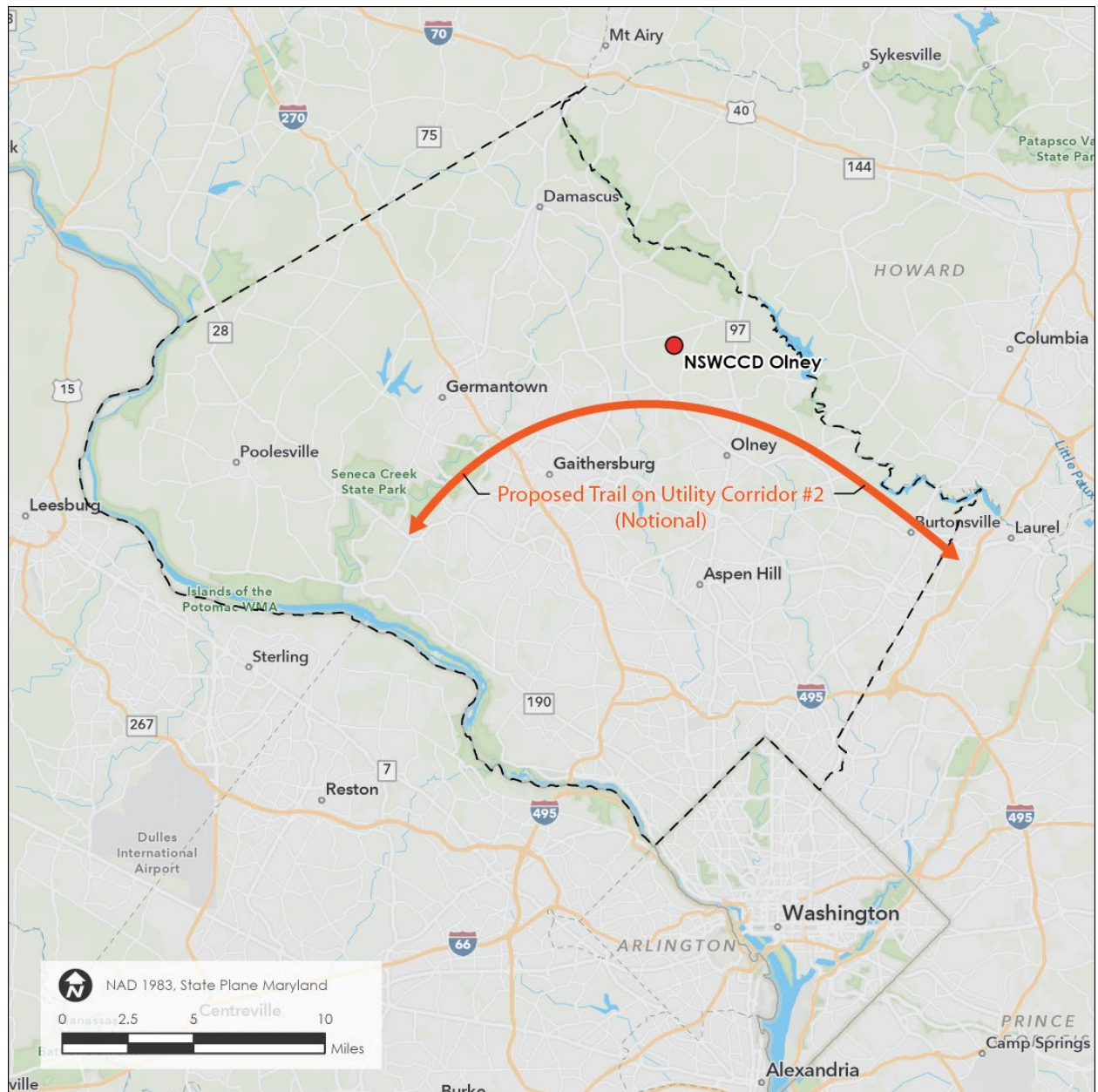
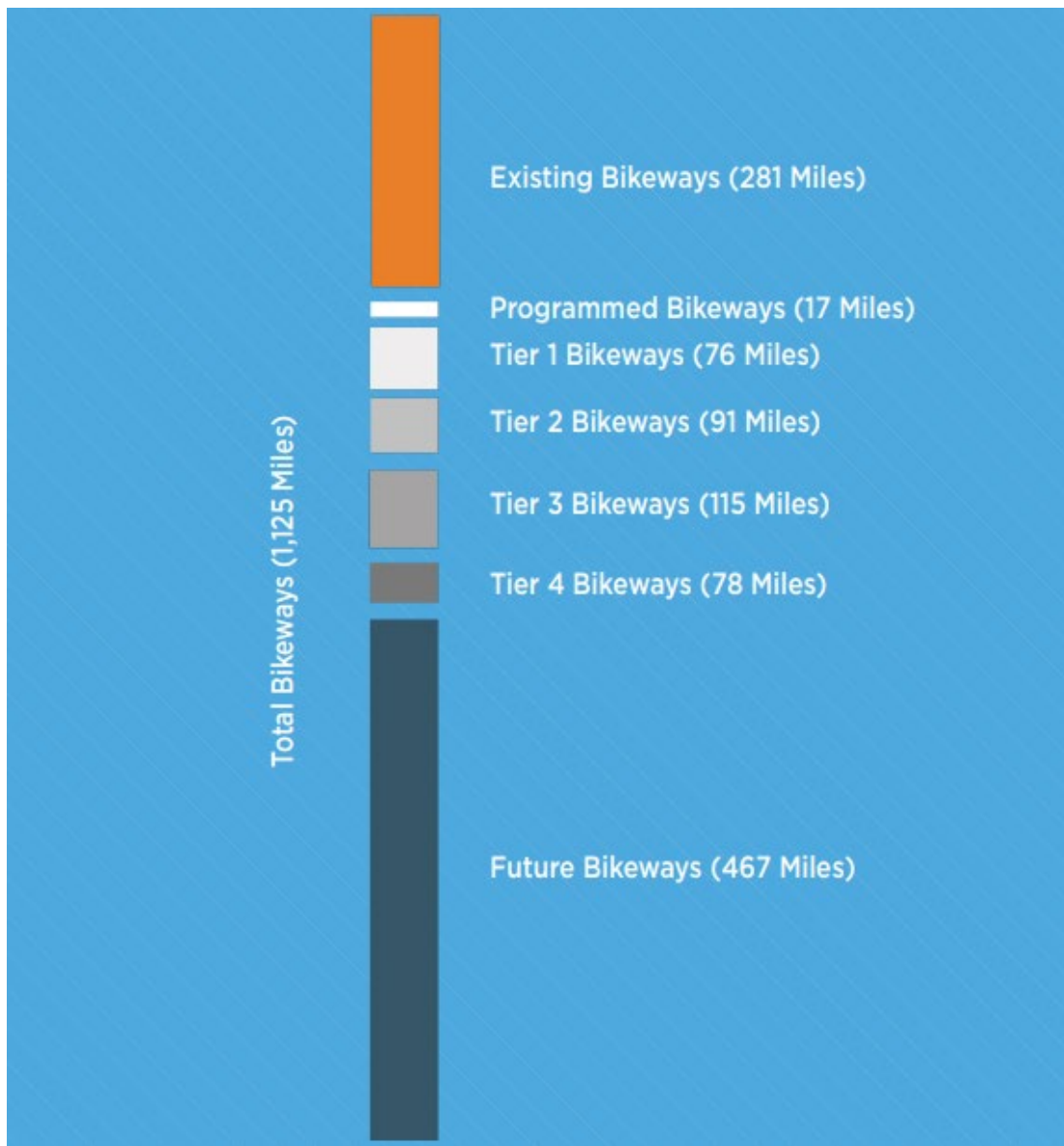


Figure 2: Prioritization Tiers in the 2018 Bicycle Master Plan



Internal Circulation

Upon entry into the restricted area, the road forks. To the east, the road provides access to a loading dock, the wastewater treatment plant, storage and laydown areas, and a chilled water plant. To the north, the road provides access to a vehicle maintenance shop, the helipad, Building 1, and the main parking lot. A dirt road encircles the outside of the restricted area and most of the installation perimeter except along the eastern boundary where the dirt road travels along the edge of the wooded area. Internal circulation at the site is shown in Figure 3.

Figure 3: Internal Circulation at NSWCCD-Olney Support Center



Parking

The NSWCCD-Olney Support Center Building 1 facility currently has an occupancy of 73 cubicles or hotel stations with physical seats. Additionally, there is 3,800 SF of unutilized space that has not been assigned. This unutilized space could support an administrative occupancy up to an additional 30 personnel. There are three conference rooms that have capacities of 27, 35, and 50 persons. These conference facilities are utilized by the entire Carderock organization or are booked by outside organizations through the NSWCCD conference facility network. Additionally, there are contractor support personnel who work on the site such as janitors and grounds staff as well as a six-member police staff. All of these employees, conference attendees, and support personnel drive personal vehicles daily. Additionally, the police vehicles are parked in the main parking lot when not in use.

The current NSWCCD-Olney Support Center site main parking lot has 121 total spaces and the cellphone lot on the exterior of the fence has 24 spaces. The cellphone lot is not intended for use by employee or conference attendee parking. Once Building 1 is fully occupied, and outside organizations are utilizing the conference facilities, the main parking lot will be undersized to support this occupancy level. Figure 4 depicts parking at the site.

Per NCPC's August 21, 2019 parking maximums, Olney should follow a 1:2 parking ratio, meaning for every one parking space, there should be two employees. By this measure, the site has too much parking. Because the cellphone lot is located outside of the secure area and the site currently has no pedestrian entrance nor does it have pedestrian infrastructure within the site, it is not currently suitable for employee use.

Table 1 provides the parking ratios as two scenarios: one with and one without the inclusion of the cellphone lot in the parking space total. Both scenarios include the four EV charging spaces. Neither scenario includes the two handicap spaces as the site is required to provide them regardless of staff disability status per Federal requirements. Neither scenario includes the six government vehicle spaces and seven loading dock spaces as they are not for daily employee use. This table also calculates the ratio based on the anticipated employee count over the next five years (125 employees) rather than the current number of employees, which is 35. Table 2 depicts the additional parking burden that the site would experience if all conference spaces were in use and all users arrived to the site in their own vehicle. This scenario will not be an everyday occurrence but is reasonable to anticipate.

Table 1: Parking Ratio for Permanent Employees in Next Five Years

Scenario	Employees	Total Spaces	Ratio
Without Cellphone Lot	131	121	1 space per 1.08 employees
With Cellphone Lot	131	145	1 space per 0.90 employees

Table 2: Maximum Vehicles Possible on Site for Conference Space

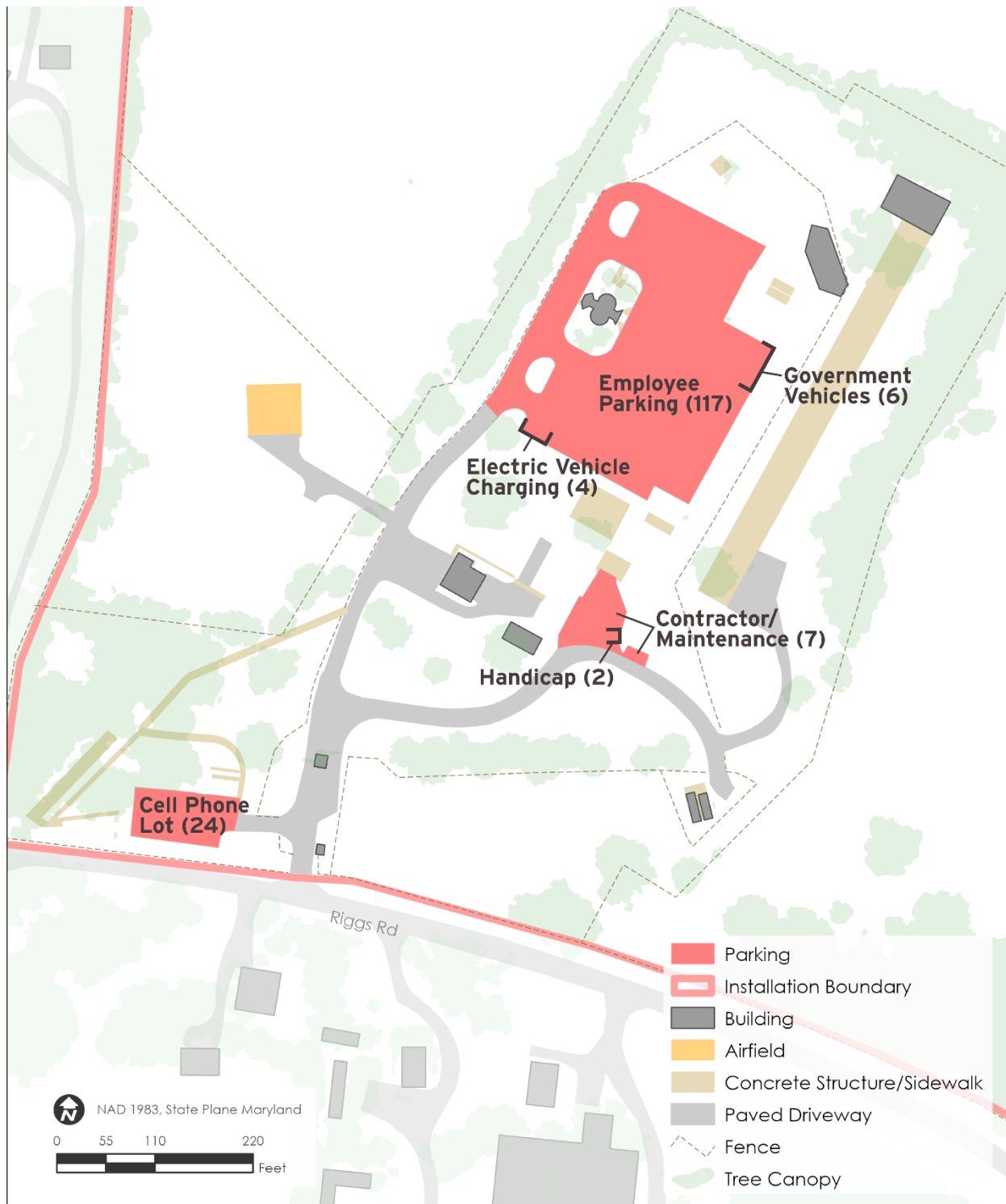
Conference Scenario	Additional Vehicles Expected (Maximum)	Total Spaces Available (Including Cellphone Lot)
Full Use	112	14

Request for Parking Policy Deviation

The Navy's acquisition of the Olney Support Center should prove to be opportune as the other NSWCCD sites reach full build out. NSWCCD's future requirements at the Olney Support Center are currently unknown, but the site is prepared to host crucial expansions in service of NSWCCD's mission. Because of this uncertainty, a parking reduction would be an inefficient use of resources. Additionally, this site's location meets Criterion 1, Criterion 2, and Criterion 3 in Table 7: Criteria for Deviations from Parking Policies of NCPC's *Submission Guidelines*. NSWCCD-Olney Support Center is not located near any transit infrastructure and is not connected to a bicycle or pedestrian network. There are no long-term plans to bring transit, bicycle, or pedestrian infrastructure within a ten minute walk to the site.

Therefore, this TMP recommends preserving all existing parking. Once the site reaches its anticipated 125 total employees, the parking ratio on site will be close to 1:1 (when not counting the cell phone lot). If NCPC does not approve a deviation and requires that NSWCCD-Olney Support Center achieves the 1:2 parking ratio, then the site can approach that ratio over time by using the existing parking lot rather than constructing additional parking. This assumption will be documented in the NSWCCD-Olney Support Center Area Development Plan, which guides future development at the site.

Figure 4: Parking at NSWCCD Olney



3. Travel Patterns and Commuter Behavior

NSWCCD hosted an employee commuter survey (the survey) online from May 3, 2023 to May 19, 2023. The survey used the Google Forms platform. NSWCCD encouraged employees to complete the survey via two email blasts – one on May 3 and one on May 18. A total of 43 people took the survey. This sample size is statistically significant, meaning it is representative of the population of current and future NSWCCD-Olney Support Center staff. The survey collected current and future commuting patterns of the participants over the next five years.

The survey shows that current and future employees of NSWCCD-Olney Support Center are geographically decentralized and plan to commute to the site by personal vehicle alone. Because of the existing home locations of future NSWCCD-Olney Support Center staff and the rural location of the site itself, survey participants did not find traditional TDM programs to be useful to them. Full details from the survey are provided in the following sections.

Employee Designation

This section of the survey identified the office, component, or group that the participant currently works for and if they would be working at least a few hours per week at NSWCCD-Olney Support Center over the next five years. The participants are employed by several different groups. Most participants expect to work at least some hours at NSWCCD-Olney Support Center within the next five years.

Current Office/Component/Group

There were 20 unique responses for the current office/component/group question. Participants provided their response as a code number with the exception of two responses grouped as “other.” Nine codes had only one participant each.

Expectation of Working at NSWCCD-Olney Support Center in Next Five Years

Of the 43 participants, 37 stated that they would be working at NSWCCD-Olney Support Center at least some of the work week within the next five years. Seven participants are unsure if they would work at NSWCCD-Olney Support Center in the next five years. None of the participants selected “no” on this question.

Current Commute

The Current Commute section asked participants to provide their commuting habits. This included their primary place of work, their arrival and departure times, their commute time and mileage, their home zip code, and their primary mode of travel. Most participants currently work at NSWCCD Carderock. Participants arrive consistently throughout the morning, but departure times are more variable. Most participants commute for less than 30 miles and less than 45 minutes. Participants are decentralized throughout Virginia and Maryland, extending from western Westmoreland County, Virginia in the south to northern Frederick County, Maryland in the north – a total distance of over 100 miles.

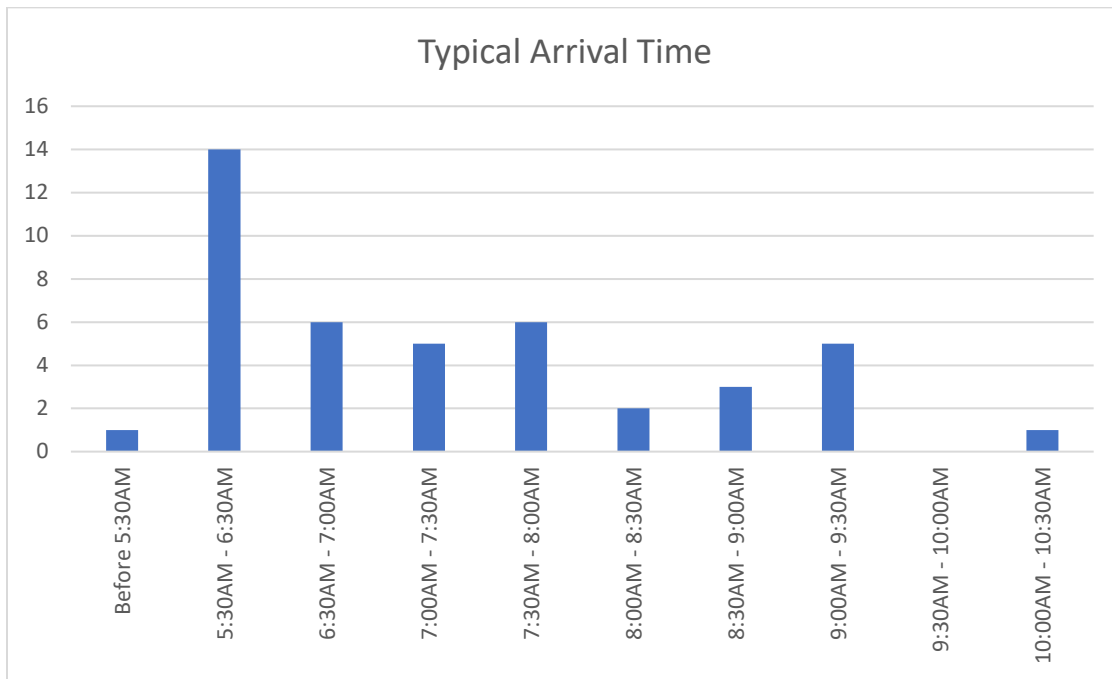
Current Place of Work

The majority of participants work at NSWCCD Carderock (58 percent or 25 out of 43 participants). All of the participants who responded that they did not know whether they would work at NSWCCD-Olney Support Center at least some of the work week over the next five years are participants from NSWCCD Carderock. Eighteen participants (42%) work at NSWCCD-Olney Support Center, currently.

Typical Arrival Time

Most participants arrive to work between 5:30 AM and 8:00 AM, with the most common period of arrival being between 5:30 AM and 6:00 AM. No participants arrive at the workplace after 10:30 AM. Figure 5 depicts the distribution of arrival times.

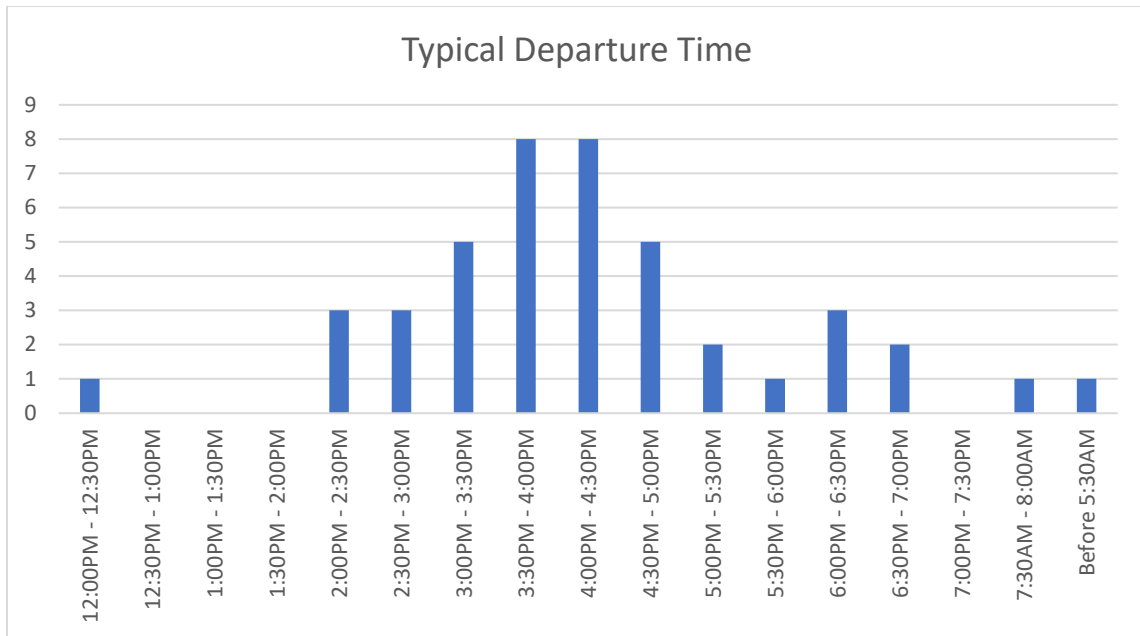
Figure 5: Typical arrival Time



Typical Departure Time

Departure times are not as consistent as arrival times. Most participants said they leave work between 2:00 PM and 5:00 PM with a peak departure period between 3:30 PM and 4:30 PM. Two responses have been removed from Figure 6, which depicts the distribution of departure times. Those responses indicated an early morning departure, which would result in an 18 – 24 hour workday when compared to those same participants' start time. This error may have been due to a misreading of "AM" versus "PM" in the survey.

Figure 6: Typical Departure Time



Typical Commute in Miles

Most participants had a commute of less than 30 miles, but the most common response was between 35 miles – 40 miles. Figure 7 depicts the distribution of participant commute distance in miles.

Typical Commute in Minutes

Participant commute times varied more widely than commute distance. With the exception of two outliers that had commutes lasting over 100 minutes, all participant commutes were under 70 minutes. The majority of participant commutes are under 45 minutes. Figure 8 depicts the distribution of participants commute time.

Figure 7: Typical Commute Distance in Miles

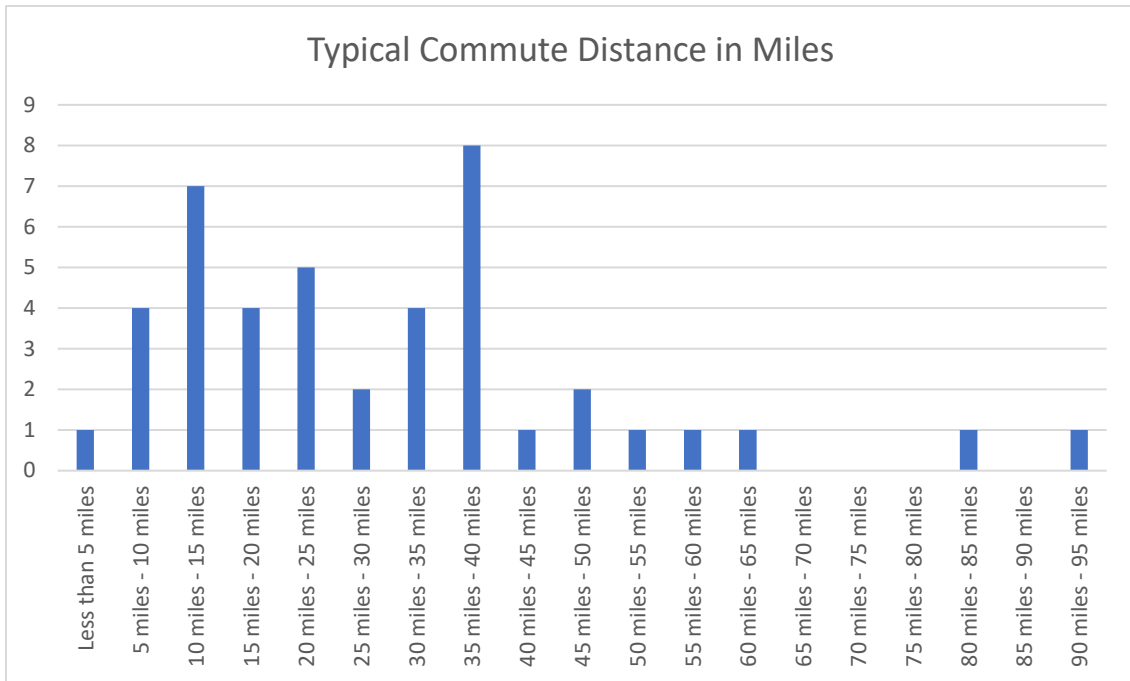
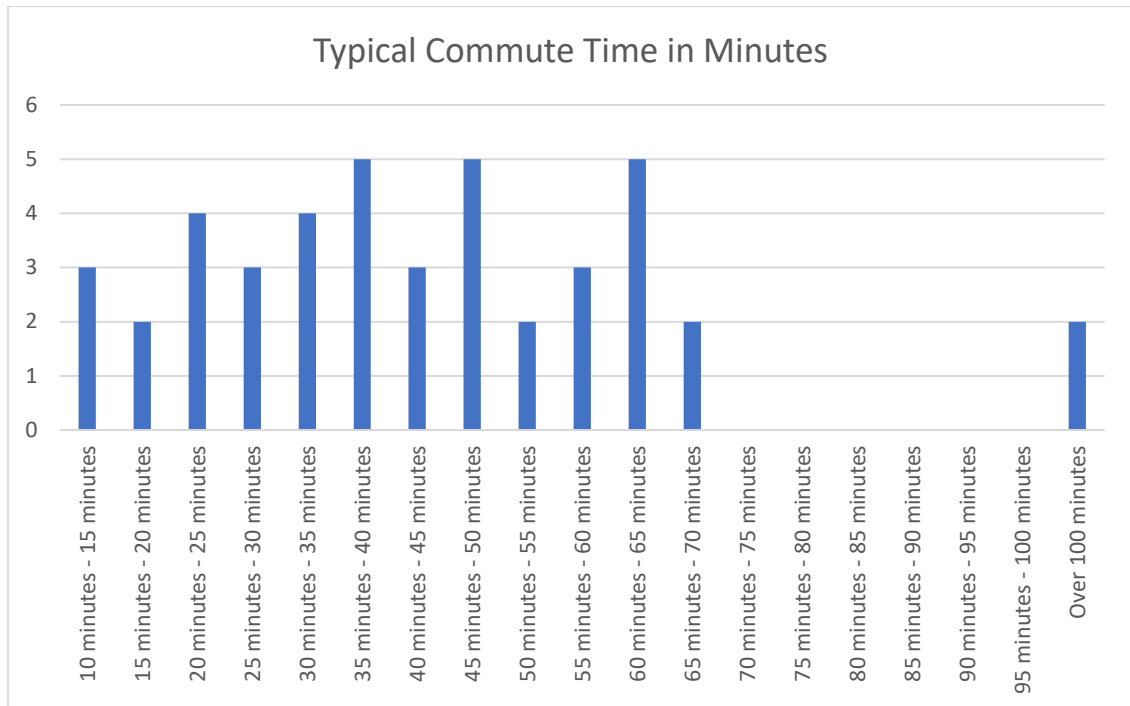


Figure 8: Average Commute Time in Minutes



Zip Code

Participants live throughout Maryland and Virginia. The distribution of zip codes is decentralized, with 34 unique zip codes for the 43 total participants. Only eight of these zip codes have more than one participant residing within them and none of those eight zip codes have more than two participant

residents. Zip codes extend from Westmoreland County, Virginia in the south to Frederick County, Maryland in the north. The most western zip codes are in Loudoun County, Virginia and the most eastern are in Prince George's County, Maryland. A map of participant zip codes is depicted in Figure 9.

Most Common Commute Types

The majority of participants drive to work alone (93% or 40 participants). Two participants use ride share to get to work and one arrives by bicycle. All three of these participants work at NSWCCD Carderock.

Future Commute

The final section of the survey asked participants to describe their commute in the next five years and assessed their interest in TDM programs. Over the next five years, every survey participant who will work at NSWCCD-Olney Support Center plans to commute there by driving alone. There is little participant interest in conventional TDM programs, likely due to the highly decentralized nature of participant residences and the rural location of the site.

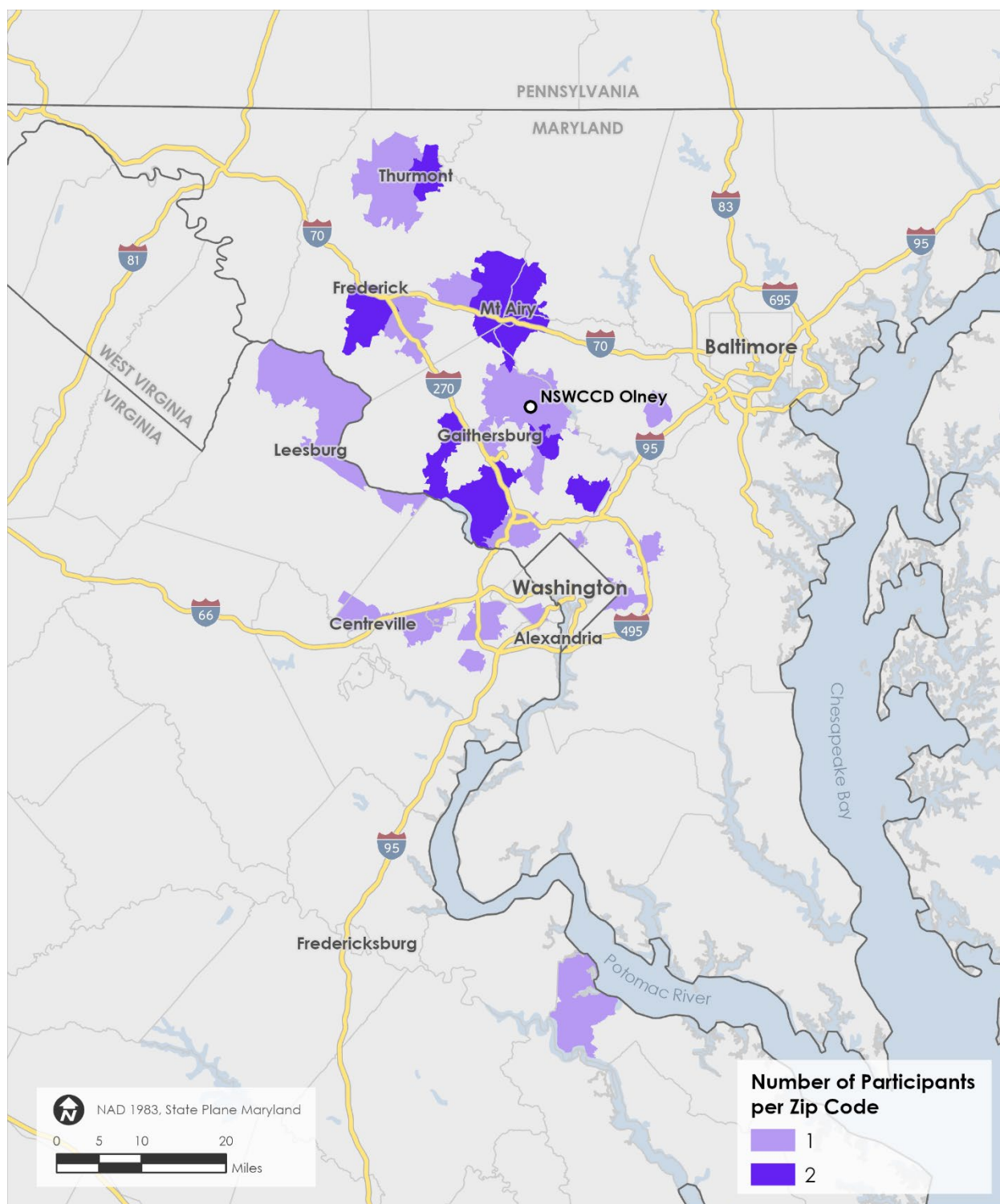
Commutes in the Next Five Years

Every participant said that they plan to commute to NSWCCD-Olney Support Center by driving alone when working there over the next five years.

Commuter Options

The majority of participants (74% or 32 participants) are not interested in any TDM programs to assist in their commutes to NSWCCD-Olney Support Center over the next five years. Five participants said they would be interested in an employee shuttle that connects NWSSCD sites and nearby Metrorail and MARC stations. Four participants said that they would be interested in online matching services for carpools and vanpools. Two participants said they would be interested in employee ride-share from either the Glenmont Metro station or the Shady Grove Metro station.

Figure 9: Participant Zip Codes



4. Projected Travel and Transportation Impacts

To project future transportation impacts, the project team collected data for several intersections surrounding NSWCCD-Olney Support Center. This area is predominantly rural east of Olney Laytonsville Road and north of Brookeville Road, with the typical cross-section on the study area roadways being two lanes.

Data Collection

Small teams set up traffic counting cameras to record turning movements at the peak hour (7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM). The teams positioned these cameras at five study area intersections, presented in Figure 10, on March 2023. Those locations were:

1. MD 108 (Laytonsville Road) and Brink Road/Sundown Road
2. Sundown Road and Zion Road
3. Sundown Road and MD 650 (Damascus Road)
4. MD 108 (Olney Laytonsville Road) and Riggs Road
5. MD 108 (Olney Laytonsville Road) and Zion Road

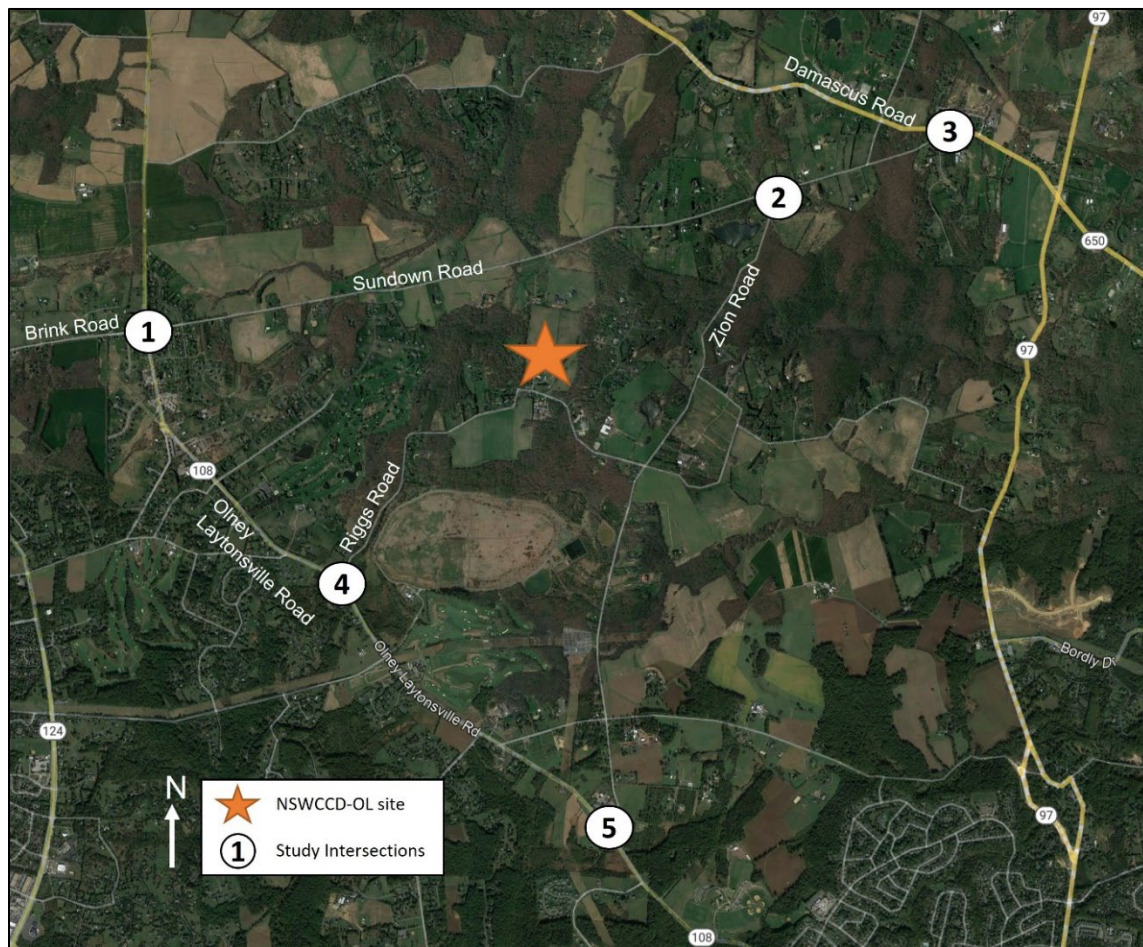
This analysis' AM and PM peak hour volumes are based on the peak hours of each individual intersection. This, along with the distance between intersections, leads to some imbalances along Laytonsville Road and Olney Laytonsville Road. However, this does provide the most conservative analysis results.

Analysis

The *Highway Capacity Manual 6th Edition* (Exhibits 19-8 and 20-2) provides the criteria to determine Level of Service (LOS). LOS is similar to a report card. An LOS of "A" is the best, representing minimal delay per vehicle. An LOS of "F" is the worst, representing extensive delays. The project team coded existing roadway network features and turning movement count data in *Synchro 11* for the AM and PM peak hours. The following are additional parameters and assumptions for the *Synchro* model:

- The minimum initial green time is ten seconds for the mainline Olney Laytonsville Road during phase 2 and 6 and seven seconds for all other movements.
- Right-turns on red are allowed.
- Signals are yellow for five seconds.
- Signals are all red at the same time for a two-second period.
- During every signal cycle five seconds of "lost time" is calculated. This is the period of time during a green light where vehicles are not fully passing through the intersection.
- A percentage of heavy vehicles is included for each approach.
- All intersections have an Actuated-Uncoordinated control, meaning they use detectors to activate the green cycle.
- The mainline of Olney Laytonsville Road has a minimum recall for phase 2 and 6, meaning that the signal will always turn green even if there are no queued vehicles. No other intersections have a recall mode.
- There are a minimum of four vehicles per hour for all movements.
- Peak Hour Factors – which compare traffic volumes during the busiest period of the peak hour with the total volume during the peak hour – are calculated for the overall intersection.

Figure 10: Study Intersections



As shown in Table 3, the signalized Laytonsville Road and Brink Road/Sundown Road intersection is currently operating at LOS C in both the AM and PM peak hours. The stop-controlled minor street approaches at the Zion Road and Damascus Road intersections along Sundown Road are currently operating at LOS B or better in both peak hours. At the Riggs Road and Zion Road intersections along Olney Laytonsville Road, the stop-controlled minor-street approaches are currently operating at LOS F in the AM peak hour and LOS E in the PM peak hour, primarily due to vehicles inability to find a gap in the mainline traffic stream along Olney Laytonsville Road.

As shown in Table 4, queues at the study area intersections are minimal, with all queues (95% from *Synchro*) currently contained within the existing available storage bays in both the AM and PM peak hours.

Table 3: Operational Results for Study Intersections

Intersection	Scenario	Overall Delay (LOS)	Delay per Lane Group by Approach (sec/veh) (Level of Service)													
			Eastbound			Westbound			Northbound			Southbound				
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT		
Laytonsville Road & Brink Road/Sundown Road (Node 1)	AM Peak Hour															
	2023 Existing	21.8 (C)	40.0			38.0			28.0			12.2			6.2	14.6
			D			D			C			B			A	B
			40.0 (D)			31.3 (C)			12.2 (B)			14.5 (B)				
	PM Peak Hour															
	2023 Existing	20.8 (C)	32.8			27.2			28.4			17.8			7.0	7.4
			C			C			C			B			A	B
32.8 (C)			28.2 (C)			17.8 (B)			7.4 (A)							
Sundown Road & Zion Road (Node 2)	AM Peak Hour															
	2023 Existing	-	-	-	-	8.4			-	11.2 ¹			-	-	-	
			-	-	-	A			-	B ¹			-	-	-	
			-			3.9 (A)			11.2 (B)			-				
	PM Peak Hour															
	2023 Existing	-	-	-	-	7.8			-	11.4 ¹			-	-	-	
			-	-	-	A			-	B ¹			-	-	-	
-			1.3 (A)			11.4 (B)			-							
Sundown Road & Damascus Road (Node 3)	AM Peak Hour															
	2023 Existing	-	-	-	-	8.5			-	12.3 ¹			-	-	-	
			-	-	-	A			-	B ¹			-	-	-	
			-			7.0 (A)			12.3 (B)			-				
	PM Peak Hour															
	2023 Existing	-	-	-	-	8.2			-	12.0 ¹			-	-	-	
			-	-	-	A			-	B ¹			-	-	-	
-			5.0 (A)			12.0 (B)			-							
Olney Laytonsville Road & Riggs Road (Node 4)	AM Peak Hour															
	2023 Existing	-	-	-	-	19.5	-	9.8	-	-	-	7.8			-	
			-	-	-	C	-	A	-	-	-	A			-	
			-			14.7 (B)			-			0.2 (A)				
	PM Peak Hour															
	2023 Existing	-	-	-	-	17.2	-	12.2	-	-	-	8.7			-	
			-	-	-	C	-	B	-	-	-	A			-	
-			14.9 (B)			-			0.2 (A)							
Olney Laytonsville Road & Zion Road (Node 5)	AM Peak Hour															
	2023 Existing	-	-	-	-	69.3 ¹			-	-	-	8.8			-	
			-	-	-	F ¹			-	-	-	A			-	
			-			69.3 (F)			-			0.0 (A)				
	PM Peak Hour															
	2023 Existing	-	-	-	-	42.0 ¹			-	-	-	9.5			-	
			-	-	-	E ¹			-	-	-	A			-	
-			42.0			-			0.1 (A)							

¹Shared Left/Right-Turn Lane

LT = Left Turn, TH = Through Movement, RT = Right Turn

Table 4: Study Intersections 95th Percent Queue Lengths

Intersection	Movement	Queue Length (feet) ¹	Available Storage Length (feet)
Laytonsville Road & Brink Road/Sundown Road (Node 1)	AM Peak Hour		
	Eastbound LT/TH/RT	326	400 ³
	Westbound LT	84	300 ²
	Westbound TH/RT	130	475 ³
	Northbound LT/TH/RT	163	1,275 ³
	Southbound LT	6	50 ²
	Southbound TH/RT	354	4300 ³
	PM Peak Hour		
	Eastbound LT/TH/RT	218	400 ³
	Westbound LT	58	300 ²
	Westbound TH/RT	189	475 ³
	Northbound LT/TH/RT	409	1,275 ³
	Southbound LT	7	50 ²
	Southbound TH/RT	87	4300 ³
Sundown Road & Zion Road (Node 2)	AM Peak Hour		
	Northbound LT/RT	8	5350 ³
	Westbound TH/LT	13	2,450 ³
	PM Peak Hour		
	Northbound LT/RT	33	5350 ³
Sundown Road & Damascus Road (Node 3)	AM Peak Hour		
	Northbound LT/RT	48	500 ³
	Westbound TH/LT	23	3,350 ³
	PM Peak Hour		
	Northbound LT/RT	55	500 ³
Olney Laytonsville Road & Riggs Road (Node 4)	AM Peak Hour		
	Westbound LT	3	9,000 ³
	Westbound RT	0	9,000 ³
	Southbound TH/LT	0	1,600 ³
	PM Peak Hour		
	Westbound LT	3	9,000 ³
	Westbound RT	3	9,000 ³
	Southbound TH/LT	0	1,600 ³
Olney Laytonsville Road & Zion Road (Node 5)	AM Peak Hour		
	Westbound LT/RT	65	25 ²
	Southbound TH/LT	0	50 ²
	PM Peak Hour		
	Westbound LT/RT	35	25 ²
	Southbound TH/LT	0	50 ²

¹95% Queues from Synchro²Includes full storage only; taper is not included.³Distance to adjacent intersection[#]95% volumes exceed capacity; queue may be longer

LT = Left Turn, TH = Through Movement, RT = Right Turn

Future Considerations

Thirty-five employees currently work on-site at NSWCCD-Olney Support Center. The total number of staff is expected to increase to 125 in the next five years. As of October 2023, NSWCCD has not identified additional future staff as of October 2023. The increase of approximately 90 staff members is not expected to have a negative impact on roadway operations and it is anticipated that the study intersections will remain under capacity.

5. Transportation Demand Management

This TMP is being submitted to NCPC due to the concurrent drafting of a Master Plan for NSWCCD-Olney Support Center. When not accompanying a master plan, the TMP process is recommended for 100-employee increases and required for 500-employee increases. NSWCCD-Olney Support Center is not anticipated to reach a 100 employee increase in the short term and unlikely to see a 500 employee increase within the Master Plan's planning horizon of 20 years. The TDM strategy for NSWCCD-Olney Support Center should reflect the moderate increase in employees, the rural location of the site, the decentralized home locations of employees, and the minimal impacts expected to the local transportation network.

Short-Term TDM Strategies

As the site renovates and expands to accommodate a 90-employee increase, NSWCCD tenants and components should implement work schedules that decrease the number of employees commuting during peak hours. This can be accomplished through the following strategies:

Alternative Work Schedule (AWS)

An alternative work schedule (AWS) is a TDM strategy that schedules employees to work hours outside of the traditional five day, 40-hour work week. An AWS can help alleviate a site's impact on the local transportation network by limiting the number of trips to and from the site that occur concurrently. The following paragraphs detail how an AWS is scheduled.

A compressed schedule is a fixed schedule that requires longer but fewer workdays over a two-week period. These schedules are most commonly implemented as either nine-hour days with one extra day off every two weeks or ten-hour days with an extra day off every week. The particular day off could be different between groups of employees. This would distribute the benefit of this form of AWS through multiple days of the week.

A flexible schedule does not have fixed start and end times and are often determined between a supervisor and their employees. Flexible schedules usually require employees to work a set period of core hours but can vary widely. The following are types of flexible schedules as defined by the Department of Commerce Office of Human Resources:

- **Maxiflex:** Core hours set by the supervisor occur on fewer than ten workdays during the two-week pay period. The employee is free to log their remaining hours (a total of 80 every two-weeks) at their discretion. Maxiflex would allow employees to create their own compressed schedule if desired and allows them to change their schedules from day-to-day.
- **Variable Week:** Core hours set by the supervisor occur each of the ten days in the two-week pay period. Employees can log their remaining work hours at any time outside of core hours.

Variable week schedules require employees to appear at work every day of the week for at least their designated core hours.

- Gliding: Core hours set by the supervisor occur each of the ten days in the two-week pay period. Employees must work eight-hour days but can arrive at any time before the core work hours begin and depart whenever they complete their eight-hour day.
- Flexi Tour: Similar to the gliding schedule, core hours set by the supervisor occur each of the ten days in the two-week pay period. Under this schedule, the employee's start and end times for an eight-hour workday are set for a certain period of time.

Staggered Shifts

Staggered shifts are deliberately scheduled arrivals and departures for components, teams, or individuals. This form of scheduling would designate when employees start and end their day. Staggered start and end times can work with any alternative work schedule and help to remove trips occurring during the peak hours.

Long-Term TDM Strategies

The degree of long-term employee growth at NSWCCD-Olney Support Center is unknown. The unique features of the site and its ample acreage of undeveloped land could lead to increased interest from components and private-sector tenants. However, the site's remote location could also prevent further development between six and 20 years from today. These unknowns leave few long-term TDM possibilities for the rural site. The site should implement a monitoring strategy for TDM in the event NSWCCD-Olney Support Center continues to grow. This strategy is defined in Chapter 7: Monitoring and Evaluation.

6. Implementation

Because transit and ridesharing opportunities are not feasible for NSWCCD-Olney Support Center, the site should work to achieve the schedule based TDM strategies outlined in Chapter 5: Transportation Demand Management. These strategies will accomplish the NCPC's directive to discourage single-occupant travel during peak hours and non-peak hours. This chapter outlines how to implement these TDM strategies.

Employee Transportation Coordinator

NSWCCD-Olney Support Center should assign an Employee Transportation Coordinator (ETC). The ETC should be an individual already working on-site and familiar with tenant and component supervisors. The ETC is not a full-time position, but rather a role assigned to an interested staff member. The recommended TDM strategies for NSWCCD-Olney Support Center will not require frequent inspection or regular report-outs, so ETC duties should not incur a significant time commitment or staff cost. The ETC will hold meetings for tenant and component supervisors to coordinate on the implementation of the recommended TDM strategies and will periodically monitor their effectiveness.

AWS Scheduling

The ETC should coordinate between tenant and component supervisors to implement sitewide alternative work schedules. This collaboration should map out core hours, compressed schedule employees, flex schedule employees, and start and end schedules. The goals of this coordination should be:

- minimize traditional 9-to-5 work weeks through compressed and flex scheduling
- minimize site-generated trips during the peak hour by staggering shift start and end times between tenants and components
- distribute the benefit of the four-day on-site work week by scheduling compressed schedule days off
- align core hours where possible to optimize tenants and components that require collaboration

TMP Updates

The employee transportation coordinator should be familiar with the requirements of NCPC and act as NSWCCD-Olney Support Center's liaison to NCPC when required. The ETC should track any employee additions and be prepared to assess the relevance of this TMP document when the site hits the following thresholds:

- 225 employees (TMP update recommended)
- 325 employees (TMP update recommended)
- 425 employees (TMP update recommended)
- 525 employees (TMP update recommended)
- 625 employees (TMP update required)

These thresholds are based on NCPC's recommendation to complete a TMP for every 100-employee increase and the NCPC's requirement to complete a TMP for every 500-employee increase. After each increase of 100 employees, the employee transportation coordinator should offer an employee survey based on the one created for this TMP. If the survey results reveal an opportunity for carpooling, vanpooling, or shuttling, then the ETC should recommend that NSWCCD-Olney Support Center complete a TMP update. If the survey results are inconclusive, the ETC should request NCPC's input on the need for a TMP update.

7. Monitoring and Evaluation

This is NSWCCD-Olney Support Center's first TMP and the traffic analysis included in Chapter 4: Projected Travel and Transportation Impacts serves as the site's baseline data. The site should implement the TDM recommendations as it grows and monitor their impacts. Monitoring efforts should expand as the site reaches its anticipated employee count over the next five years.

The employee transportation coordinator should lead the monitoring efforts. The ETC should answer the following questions every six months and/or after major site developments:

1. Have any projects been implemented since Master Plan approval that influence parking?
2. Have any external developments or infrastructure projects influenced the local transportation network?
3. How many new employees are on the site since TMP approval?
4. What is the current parking ratio?
5. Are there internal circulation or site access issues?
6. Have employee mode choices changed since TMP approval?

These questions will help inform the monitoring and evaluation process and can be determined in part through the following:

Master Work Schedule

The employee transportation coordinator should keep all employee schedules in their TDM spreadsheet. Supervisors should send schedule changes to the ETC when they occur. The ETC should coordinate with supervisors during the on-boarding phase for new hires to ensure that new employees' schedules align with NSWCCD-Olney Support Center's short-term TDM goals.

Commuter Surveys

The employee transportation coordinator should periodically offer short commuter surveys that collect employee trip mileage, commute time, and mode choice. This data can be used to determine if average commutes are worsening or improving over time and if employees are shifting their mode choices.

Traffic Studies

The employee transportation coordinator should coordinate with NCPC to determine the appropriate interval between traffic studies. It is possible that the traffic study included in Chapter 4: Projected Travel and Transportation Impacts will need to be updated when the site reaches the next NCPC threshold of 225 employees.