DRAFT ENVIRONMENTAL ASSESSMENT

Medical Waste Incineration Options

U.S. Army Garrison Fort Detrick
Directorate of Public Works, Environmental Division

May 2020

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Draft Environmental Assessment

U.S. Army Garrison Fort Detrick
Directorate of Public Works, Environmental Division

May 2020

FINDING OF NO SIGNIFICANT IMPACT

MEDICAL WASTE INCINERATION OPTIONS AT FORT DETRICK, MARYLAND

Introduction

Fort Detrick includes six non-contiguous land parcels designated as Areas A, B, Area C Water Treatment Plant (WTP), Area C Wastewater Treatment Plant (WWTP), Forest Glen Annex, and Glen Haven Housing Area. Areas A, B, and C are located within Frederick County, Maryland. Within Frederick County, Fort Detrick encompasses approximately 1,212 acres. The US Army Garrison (USAG), Fort Detrick, has command and control of approximately 1,143 of those acres, and the National Cancer Institute at Frederick (NCI-Frederick) owns and operates approximately 69 of those acres. Although the NCI-Frederick is located within the boundary of Fort Detrick, it is not on Army-controlled land. The 1,143 acres of Army-controlled land are divided into four separate parcels identified as Areas A (728 acres), B (399 acres), Area C WTP (7 acres), and Area C WWTP (9 acres).

The primary missions at Fort Detrick are biomedical research and development, medical logistics and materiel management, and global Department of Defense (DoD) telecommunications. Fort Detrick supports 34 tenant activities.

U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), and NCI-Frederick, U.S. Department of Agriculture (USDA) conduct the majority of the medical research and development activities at Fort Detrick. USAG Fort Detrick assists activities on the installation in meeting the special engineering and safety requirements of medical research and development facilities.

The Proposed Action, and the subject of this Environmental Assessment (EA), involves the resumption of onsite incineration with the design, construction, and operation of a new Hospital/Medical/Infectious Waste Incinerator (HMIWI) facility on available, buildable, previously disturbed land in proximity to the contributing research facilities.

In accordance with both Council on Environmental Quality (CEQ) and National Environmental Policy Act (NEPA) regulations (40 Code of Federal Regulations [CFR] 1508.13 and 32 CFR Part 651.21, respectively), this Finding of No Significant Impact (FNSI) hereby incorporates the entire EA by reference.

1. Purpose and Need

The **purpose** of the Proposed Action is to treat and dispose of approximately one million pounds per year of RMW generated at Fort Detrick. This material needing treatment and disposal includes

material that was intentionally exposed to pathogens in biological research, or in vivo pharmaceuticals testing. The RMW generated at Fort Detrick includes material coming out of BSL2, BSL3, and BSL4 laboratories that must be disposed of in an environmentally sound manner that adheres to safety and security standards. It includes not only the design and build of the remedy, but the continued operation in accordance with all applicable local, state, and federal laws.

The Proposed Action is **needed** because Fort Detrick and their on-site mission partners generate RMW that requires treatment and disposal. During FY 2016, approximately 1,124,420 pounds of RMW was generated from all activities. Regulatory standards must be adhered to in order to ensure human and environmental safety as well as protection of proprietary information. MEDCOM Regulation 40-35 states, "Group 5-Animal Waste. Contaminated animal carcasses, body parts, and bedding of animals that are known to have been exposed to infectious agents during research; including those produced in veterinary facilities, production of biologicals, or testing of pharmaceuticals, must be managed as RMW and be incinerated." A remedy must be selected that is capable of handling the waste in accordance with regulatory standards, prevents the public from being exposed to the waste, prohibits exposure of sensitive materials to the public, and is sustainable and reliable. Operations must be consistent with permitting conditions, and maintenance must be performed in a timely manner to ensure compliance with state and federal laws.

2. Description of the Proposed Action and Alternatives

Chapter 3 of the EA presents a discussion of the alternatives evaluated. Several incineration alternatives were dismissed as being non-viable alternatives that would be ineffective or inefficient and were eliminated from further evaluation in this EA. The non-viable alternatives eliminated from further evaluation include:

- Replace Legacy Incinerator
- Build New Incinerator at Legacy Location
- Installation of a Distributed Incinerator System at Source Locations
- Repair Legacy Incinerator

The No Action Alternative was also considered.

- **No Action Alternative -** The No Action Alternative is to continue to utilize contracted services to pick up and transport decontaminated RMW to an off-site regulated medical waste incinerator. This action would not address the potential for an accident during transport. Selecting the No Action alternative is equivalent to allowing the existing baseline environmental conditions identified in Section 4 of this document to continue.

- **The Proposed Action Alternative -** The Proposed Action, and the subject of this EA, involves the resumption of onsite incineration with the design, construction, and operation of a new HMIWI facility on available, buildable, previously disturbed land in proximity to

the contributing research facilities. The new HMIWI facility would be approximately 10,000 sq. ft, approximately one-third the size of the previous incinerator building, and have two HMIWI units that would meet all applicable installation, local, state, and federal laws and regulations, and would be used to treat RMW generated at Fort Detrick. This project includes building information systems, fire protection and alarm systems, and energy monitoring control systems connections for the proposed HMIWI facility. Each of the two HMIWI units would be operated independently, and under normal conditions would not be operated simultaneously. In the event of an emergency constituting the need to operate the two HMIWI units simultaneously, an authorization from the permitting agency would be required.

3. Environmental Analysis

Environmental Consequences and Comparison of Alternatives: Chapter 5 of the EA discusses the affected environment and potential environmental consequences for the Proposed Action by resource area. The No Action Alternative serves as a baseline from which to compare the potential impacts of the Proposed Action.

The implementation of the Proposed Action is not anticipated to result in adverse significant environmental impacts. Potential permits, plans, and measures to reduce adverse impacts identified within the EA analysis are also included within the table and support the impacts determinations presented.

Cumulative Effects: For the purposes of this EA, and in accordance with CEQ Regulation 40 CFR 1508.7, cumulative impacts result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable actions, regardless of who undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

Two study areas have been defined for evaluation of potential impacts to human and natural resources. The first study area is within 500 feet of the perimeter boundary of Area A and the second study area is within 500 feet of the perimeter boundary of Area B, with the modification to incorporate the roadways located to the east of Area B, connecting Areas A and B of Fort Detrick. These roadways would be utilized to resume the transportation of ash resulting from proposed HMIWI facility operations in Area A, to the existing active landfill in Area B. This constitutes the Proposed Action's Region of Influence (ROI) for cumulative effects. This ROI includes areas where the Proposed Action's effects would most likely contribute to cumulative environmental effects.

Construction and continued development within the region would not cause the potential for significant cumulative adverse impacts to the valued environmental components (VECs) analyzed within the EA. The resource categories for which the Proposed Action would have the potential for impacts were reviewed in Chapter 5 of the EA to determine whether or not implementation of the Proposed Action would cause the potential for significant adverse cumulative effects. The

cumulative effects analysis determined that the Proposed Action would not likely cause any appreciable significant cumulative impacts.

Proposed Impact Reduction Measures:

Various permits, plans, and measures have been identified within the EA analysis that would be undertaken by Fort Detrick to minimize adverse effects.

4. Public Review and Comment:

The Draft EA/FNSI was made available for a 30-day public review and comment period.

Printed copies of the Draft EA typically provided to local libraries were not made available in response to the COVID-19 pandemic. All materials have been provided online on the Fort Detrick website (https://home.army.mil/detrick/) by clicking on Environmental/NEPA Documents on the left side of the page, or at the following link –

https://home.army.mil/detrick/index.php/about/Garrison/directorate-public-works/environmental-management-division

Additionally, due to the COVID-19 pandemic, agency correspondence letters were provided via email, instead of printed.

A Public Notice was published in the local newspaper (*Frederick News Post*) and on the Fort Detrick website (https://home.army.mil/detrick/).

5. Finding of No Significant Impact:

I have considered the results of the analysis in the EA, the comments received during the public comment period, and associated cumulative effects.

Based on these factors, I have decided to proceed with the Proposed Action, a long-term solution that would meet all applicable federal, state, local, and installation regulations, and would be used to treat RMW generated at Fort Detrick, would meet the mission requirements at Fort Detrick, and along with specified permits, plans and measures would not have a significant impact on the quality of human life or the natural environment.

This analysis fulfills the requirements of NEPA, as implemented by the CEQ regulations (40 CFR Parts 1500-1508), as well as the requirements of the *Environmental Analysis of Army Actions* (32 CFR Part 651). Therefore, issuance of a FNSI is warranted, and an Environmental Impact Statement is not necessary.

Dexter Nunnally Date
Colonel, U.S. Army

Commanding

U.S. Army Garrison
Fort Detrick, Maryland

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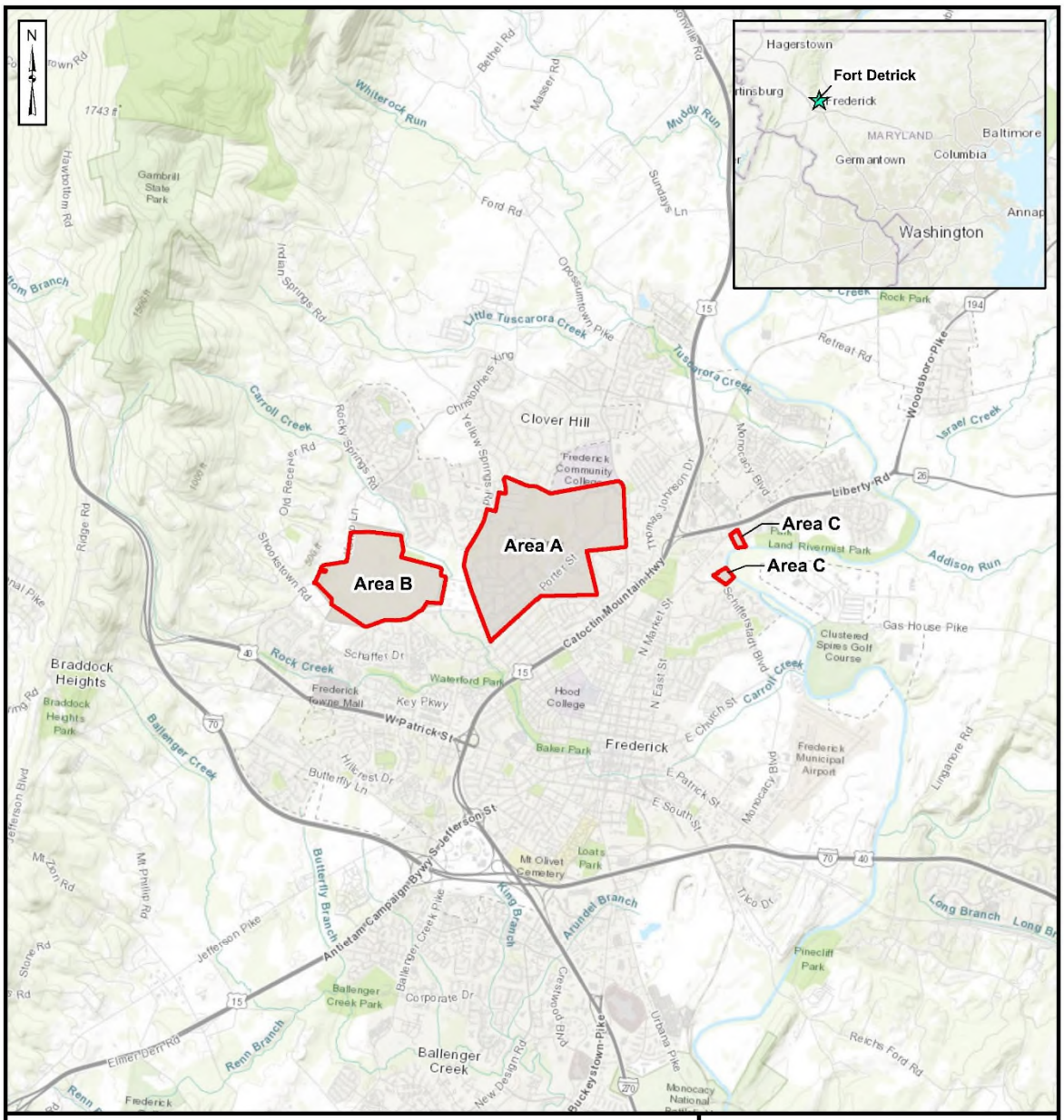
1 BACKGROUND INFORMATION

Fort Detrick includes six non-contiguous land parcels designated as Areas A, B, Area C Water Treatment Plant (WTP), Area C Wastewater Treatment Plant (WWTP), Forest Glen Annex, and Glen Haven Housing Area. Areas A, B, and C are located within Frederick County, Maryland. Within Frederick County, Fort Detrick encompasses approximately 1,212 acres. The US Army Garrison (USAG), Fort Detrick, has command and control of approximately 1,143 of those acres, and the National Cancer Institute at Frederick (NCI-Frederick) owns and operates approximately 69 of those acres. Although the NCI-Frederick is located within the boundary of Fort Detrick, it is not on Army-controlled land. The 1,143 acres of Army-controlled land are divided into four separate parcels identified as Areas A (728 acres), B (399 acres), Area C WTP (7 acres), and Area C WWTP (9 acres), as shown on **Figure 1-1**.

The primary missions at Fort Detrick are biomedical research and development, medical logistics and materiel management, and global Department of Defense (DoD) telecommunications. Fort Detrick supports 34 tenant activities.

U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), and NCI-Frederick, U.S. Department of Agriculture (USDA) conduct the majority of the medical research and development activities at Fort Detrick. USAG Fort Detrick assists activities on the installation in meeting the special engineering and safety requirements of medical research and development facilities.

Figure 1-1: Project Vicinity Map



1.1 U.S. Army Medical Research and Development Command

Fort Detrick includes six non-contiguous land parcels designated as Areas A, B, Area C Water Treatment Plant (WTP), Area C Wastewater Treatment Plant (WWTP), Forest Glen Annex, and Glen Haven Housing Area. Areas A, B, and C are located within Frederick County, Maryland. Within Frederick County, Fort Detrick encompasses approximately 1,212 acres. The US Army Garrison (USAG), Fort Detrick, has command and control of approximately 1,143 of those acres, and the National Cancer Institute at Frederick (NCI-Frederick) owns and operates of approximately 69 of those acres. Although the NCI-Frederick is located within the boundary of Fort Detrick, it is not on Army-controlled land. The 1,143 acres of Army-controlled land are divided into four separate parcels identified as Areas A (728 acres), B (399 acres), Area C WTP (7 acres), and Area C WWTP (9 acres), as shown on **Figure 1-1**.

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1.2 National Cancer Institute at Frederick

The NCI-Frederick conducts research and development activities designed to prevent and cure cancer and acquired immune deficiency syndrome (AIDS). NCI-Frederick is a legally separate entity that owns and occupies approximately 111 structures on approximately 69 acres of land in Area A. The NCI-Frederick facilities consist of laboratories (BSL-1 through BSL-3), laboratory animal breeding areas, and office/administrative space. Microbiology; molecular biology; biochemistry; the biology of oncogenes, viruses and retroviruses; genetics, and virology are among the research disciplines utilized in research activities at NCI-Frederick.

1.3 Agricultural Research

Agricultural research activities are performed by the USDA, Agricultural Research Service, Foreign Disease-Weed Research Unit. USDA operates a microbial containment greenhouse and laboratory complex, agricultural fields, and a research and office complex to fulfill its mission. The research conducted by USDA has emphasis on foreign plant pathogens. USDA's mission is

to develop fundamental information about foreign plant pathogens that either have potential to damage U.S. crops or have potential beneficial use in biological control of weeds.

1.4 Military Medical Program Support

Tenants such as the Joint Readiness Clinical Advisory Board (JRCAB), Joint Medical Logistics Functional Development Center (JMLFDC), and the AFMIC (Armed Forces Medical Intelligence Center) provide medical service coordination, standardization, information, and logistics support for all branches of the Armed Forces. Other tenants at Fort Detrick provide coordination, supply, and logistical support for specific Army, Navy, or Air Force medical programs. These tenants include the Technology Applications Office (TAO), Medical Communications for Combat Casualty Care (MC4), 6th Medical Logistics Management Center (6th MLMC), U.S. Air Force Medical Logistics Office (AFMLO), Wartime Medical Planning System Office (WAR-MED PSO), U.S. Army Medical Information Systems and Services (USAMISSA), and the U.S. Naval Medical Logistics Command (NMLC).

Tenants conducting medical materiel support activities under USAMRDC at Fort Detrick include U.S. Army Medical Materiel Development Activity (USAMMDA), U.S. Army Medical Research Acquisition Activity (USAMRAA) and U.S. Army Medical Materiel Agency (USAMMA). These tenants provide planning, coordination, execution, and review of Army-wide medical research, development, testing, and evaluation (RDT&E) programs. USAMMDA assumes product management responsibility once a candidate product has advanced from the research phase to the development phase. The advanced development phase managed by USAMMDA includes obtaining necessary approvals from the Food and Drug Administration (FDA) for new drugs, vaccines, and medical devices.

USAMRAA is responsible for procurement activities for USAMRDC and provides procurement support to most of the other tenant organizations on the installation, the Office of the Surgeon General of the Army, Walter Reed Army Institute of Research, and for laboratories outside the continental United States. USAMRAA also manages acquisition policies, procedures, and rules related to extramural research programs. All activities conducted by USAMRAA are administrative in nature.

USAMMA provides medical logistics management to USAMRDC through a worldwide network of logistics support organizations. Through the execution of medical logistics programs, USAMMA supports Army readiness and other critical health care missions. USAMMA also develops and initiates innovative logistics concepts and technological advances as well as managing procurement, fielding and maintenance of medical materiel and technology. All activities conducted by USAMMA are administrative in nature.

1.5 Other Operations

Other tenants at Fort Detrick conduct activities which are unrelated to military medical programs and do not involve research. These tenants include: the U.S. Army Reserve Center-Flair Armory; Company A, 1st Satellite Control (SATCON) Battalion; Company B, 4th Light Armored Reconnaissance Battalion, U.S. Marine Corps Reserve; the 1108th U.S. Army Signal Battalion; the 1110th U.S. Army Signal Battalion; the 1111th U.S. Army Signal Battalion; US Army Information Systems Engineering Command-Fort Detrick Engineering Office; US Army Security Force (USASF); and the U.S. Secret Service. The Flair Army Reserve Center contains offices, classrooms, and a drill hall. The Center serves as a facility for the organization, administration, and training of the Detachment 1, 301st Signal Company, U.S. Army Reserve. The Flair Army Reserve Center also serves Company B, 4th Light Armored Reconnaissance Battalion, 4th Marine Division, Marine Forces Reserve. The mission of the 4th Light Armored Reconnaissance Battalion is to conduct reconnaissance, security, and limited offensive and delaying operations to support the Division in developing the operational situation and in shaping the battlefield. The Flair Army Reserve Center and the 4th Light Armored Reconnaissance Battalion conduct training of reservists in vehicle repair and maintenance in Area B of Fort Detrick. The missions of the 1108th, 1110th, 1111th Signal Battalions are to operate and maintain major communications systems for the Department of Defense.

Service tenants at Fort Detrick that provide services to military personnel and the installation community include: the Army and Air Force Exchange Service (AAFES); Defense Commissary Agency (DeCA); the U.S. Army Dental Clinic; the Veterans Affairs Health Clinic; and the U.S. Army Health Clinic. Merchandise and food products are provided to personnel and their families through the AAFES and DeCA. Health and dental services are provided to military personnel and their families by the U.S. Army Dental and Health Clinic, located in the Barquist Army Health Care Facility.

2 PURPOSE AND NEED FOR THE PROPOSED ACTION

From 1995 to 2018, Fort Detrick owned and operated two HMIWIs to incinerate the regulated medical waste (RMW) generated on-site. The Garrison Commander ceased operations due to aging and failing equipment. Fort Detrick's RMW is equivalent to RMW generated by community hospitals as the laboratories autoclave waste before disposal Fort Detrick implemented a contingency plan through a contractor to transport the RMW to Curtis Bay in Baltimore, Maryland, a licensed medical waste incineration and disposal facility. The Army is aware that the current disposal option of using the Curtis Bay Incinerator has been challenged, and the City of Baltimore may be considering approving a City ordinance that would constrain or close Curtis Bay. Should in the future the City approve such an ordinance and should that ordinance withstand judicial scrutiny, then Fort Detrick would need to consider other disposal methods, with remaining commercial vendors being located out of state. Any out of state option would mean the transport of the waste a longer distance to the disposal site, and that additional transport distance would be far less desirable to Fort Detrick. Due to the availability of newer, safer, cleaner, and more efficient HMIWI technologies, Fort Detrick desires to resume ownership and operation of two HMIWI on-site to ensure:

a) RMW is processed in accordance with environmental laws.
b) any information related to studies are destroyed.
c) ash from Fort Detrick RMW stays in installation landfills instead of community locations.
d) the Army and other labs, maintain a reliable incinerator option not subject to regional disputes, legal challenges, and increasing costs for processing.

Because of these factors, Fort Detrick wishes to retain control of the waste and to have the capacity to treat and dispose of the RMW on-site.

2.1 Purpose and Need

The **purpose** of the Proposed Action is to treat and dispose of approximately one million pounds per year of RMW generated at Fort Detrick. This material needing treatment and disposal includes material that was intentionally exposed to pathogens in biological research, or in vivo pharmaceuticals testing. The RMW generated at Fort Detrick includes material coming out of BSL2, BSL3, and BSL4 laboratories that must be disposed of in an environmentally sound manner that adheres to safety and security standards. It includes not only the design and build of the remedy, but the continued operation in accordance with all applicable local, state, and federal laws.

The Proposed Action is **needed** because Fort Detrick and their on-site mission partners generate RMW that requires treatment and disposal. During FY 2016, approximately 1,124,420 pounds of RMW was generated from all activities. Regulatory standards must be adhered to in order to ensure human and environmental safety as well as protection of proprietary information. MEDCOM

Regulation 40-35 states, "Group 5-Animal Waste. Contaminated animal carcasses, body parts, and bedding of animals that are known to have been exposed to infectious agents during research; including those produced in veterinary facilities, production of biologicals, or testing of pharmaceuticals, must be managed as RMW and be incinerated." A remedy must be selected that is capable of handling the waste in accordance with regulatory standards, prevents the public from being exposed to the waste, prohibits exposure of sensitive materials to the public, and is sustainable and reliable. Operations must be consistent with permitting conditions, and maintenance must be performed in a timely manner to ensure compliance with state and federal laws.

2.2 Scope of the Environmental Assessment

This Environmental Assessment (EA) evaluates the direct and indirect impacts associated with the safe treatment and disposal of RMW in accordance with the National Environmental Policy Act of 1969 (NEPA). This document identifies and evaluates the potential environmental, cultural, and socioeconomic effects associated with the Proposed Action as accomplished by implementing the Proposed Action and the No-Action Alternative.

The EA focuses on existing resources and the potential for effects to existing resources located within 500 feet of the perimeter boundaries of Area A and Area B of Fort Detrick (study areas), as shown on **Figure 2-1**. Existing resources for both study areas are described in Section 4 of the EA. Because the only activity that would take place in Area B as part of the Proposed Action is resumption of the transport of incinerator ash to Area B and landfilling of incinerator ash in the existing active landfill, it is anticipated that not all resource types described in Section 4 of the EA would be affected by the activity in Area B. The EA text will clearly state when this is the case, and if the activity from the Proposed Action in Area B will not affect certain existing resources in Area B, the evaluation of potential effects to those existing resources in Section 5 will focus on Area A.

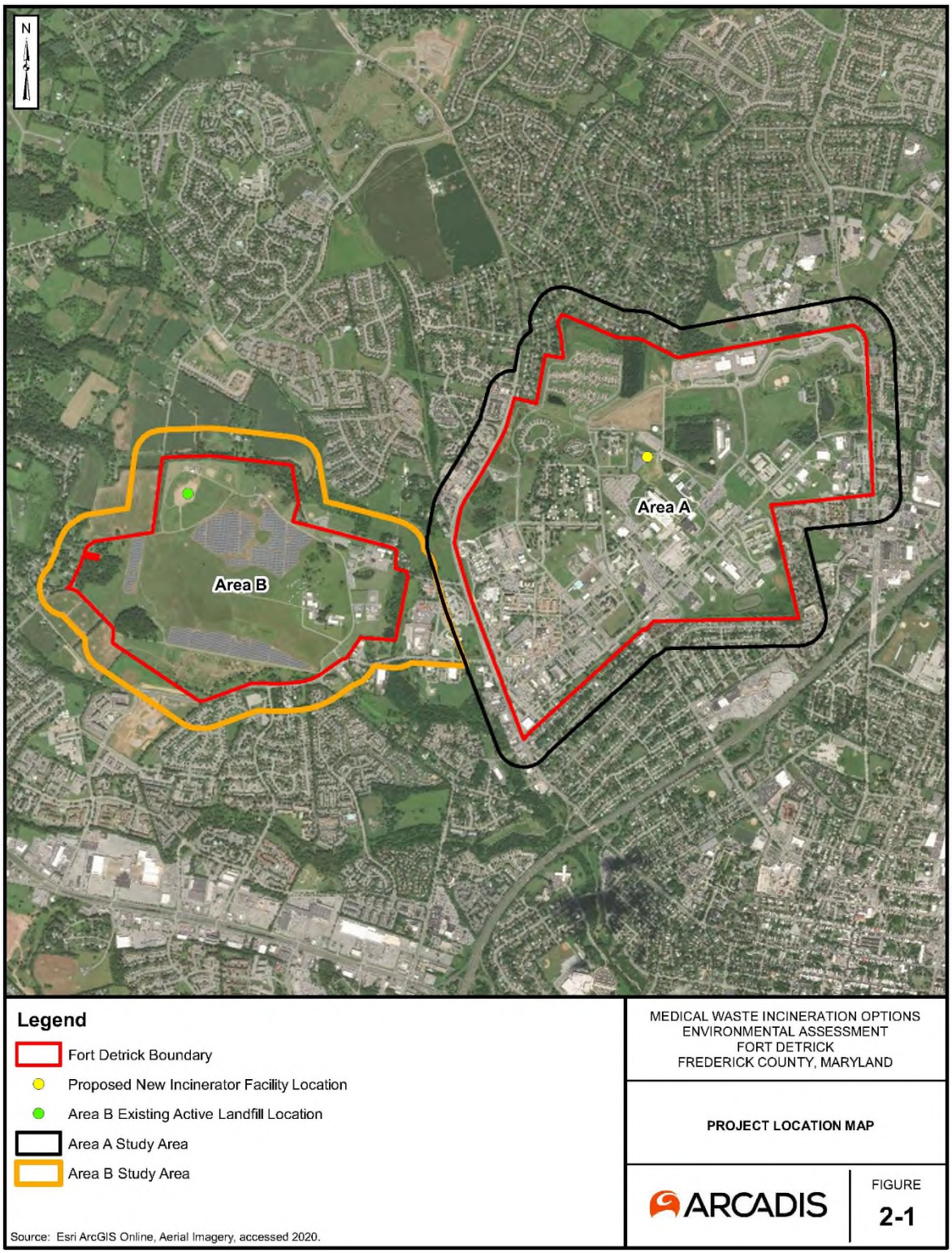
The document analyzes direct effects (those resulting from the alternatives and occurring at the same time and place) and indirect effects (those distant or occurring at a future date) of building a HMIWI facility at Fort Detrick. The potential for cumulative impacts as defined by 40 Code of Federal Regulations (CFR) 1508.7 is also addressed. Compliance with applicable state and federal statutes, standards, and directives pertinent to the Proposed Action was considered during the preparation of this EA.

Under the guidance provided in the NEPA and in 32 CFR Part 651, Environmental Analysis of Army Actions, all Army decision-making that may impact the human environment will use a systematic, inter-disciplinary approach that ensures the integrated use of the natural and social sciences, planning, and the environmental design arts. Actions that are determined to be exempt by law, emergencies, or categorically excluded do not require the preparation of an EA or EIS, but

the decision and analyses will be documented in a Record of Environmental Consideration (REC) if required. An EA provides sufficient evidence and analysis for determining whether or not to prepare an EIS. If an action may significantly affect the environment, an EIS would be prepared.

An evaluation of the environmental consequences of the implementation of the Proposed Action and the No-Action Alternative, which includes direct, indirect, and cumulative effects, as well as qualitative and quantitative (where possible) assessment of the level of significance of these effects. The EA results in either a Finding of No Significant Impact (FNSI) or a Notice of Intent (NOI) to prepare an EIS. If Fort Detrick determines that this Proposed Action may have a significant impact on the quality of the human environment, an EIS will be prepared.

Figure 2-1: Project Location and Study Areas Map



2.3 Environmental Laws and Regulations

NEPA requires all federal agencies to give appropriate consideration to potential environmental effects of proposed major actions in planning and decision-making. The Council on Environmental Quality (CEQ) is responsible for issuing regulations (40 CFR 1500 *et seq.*) implementing the provisions of NEPA. CEQ regulations in turn are supplemented by procedures adopted on an agency-specific basis. For the Department of the Army (DA), the pertinent regulations are contained in 32 CFR 650, *Environmental Protection and Enhancement*, 32 CFR 651, *Environmental Analysis of Army Actions* (dated March 29, 2002). This EA was developed pursuant to these laws and regulations.

An EA is intended to assist agency planning and decision-making. While required to assess environmental impacts and evaluate their significance, it is routinely used as a planning document to evaluate environmental impacts, develop alternatives and mitigation measures, and allow for agency and public participation (32 CFR 651.20).

Laws and regulations that may apply to the Proposed Action could include MEDCOM Regulation 40-35, the Clean Air Act of 1970 (CAA) (as amended), Clean Water Act (CWA) (1972, as amended), Toxic Substances Control Act (TSCA) (1976, as amended), Noise Control Act (NCA) (1972), Endangered Species Act (ESA) (1973, as amended), Coastal Zone Management Act (CZMA) (1972, as amended), National Historic Preservation Act (NHPA) (1966), Archaeological Resources Protection Act (ARPA) (1979), Resource Conservation and Recovery Act (RCRA) (1976), Executive Order (EO) 11593, *Protection and Enhancement of the Cultural Environment,* dated May 13, 1971; EO 11988, *Floodplain Management*, dated May 24, 1977; EO 11990, *Protection of Wetlands,* dated May 24, 1977; EO 12088, *Federal Compliance with Pollution Control Standards*, dated October 13, 1978; EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, dated February 11, 1994; EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, dated April 21, 1997; EO 13112, *Invasive Species*, dated February 3, 1999; EO 13508, *Chesapeake Bay Protection and Restoration*, dated May 12, 2009; and EO 13693, *Planning for Federal Sustainability in the Next Decade*, dated March 19, 2015, which has since been revoked by EO 13834, *Efficient Federal Operations*, dated May 17, 2018. Note that this list is not all-inclusive and other federal, state, and local laws and regulations may apply.

2.4 Public Involvement

Coordination with federal and state agencies including the U.S. Fish and Wildlife Service (USFWS), the Maryland Department of Natural Resources (MD DNR), and the Maryland Historic Trust (MHT) was initiated for the Proposed Action via letters and/or Public Notice on December

20, 2019. Copies of coordination letters and agency responses are located in Appendix A: Agency Coordination.

Public participation opportunities with respect to this EA and decision making on the Proposed Action are guided by 32 CFR Part 651, Environmental Analysis of Army Actions. On January 10, 2020, a Public Notice was advertised in the Frederick News Post and announced on the radio station WFMD announcing the date/time/location of the upcoming Public Sensing Meeting. The Public Notice was also published on the Fort Detrick website and social media. A Public Sensing Meeting was held on January 21, 2020 at the Governor Thomas Johnson High School from 6:00-8:00pm to inform the public and interested stakeholders about the proposed project, and to solicit any concerns or questions that should be considered in the EA preparation. Written comments were collected and are attached in Appendix A: Agency and Public Coordination. The Notice of Availability will be advertised in the Frederick News Post on May 18, 2020, and on the Fort Detrick website and social media. The draft EA will be made available to the public for 30 days in order to receive public comments at Department of the Army, U.S. Army Installation PAO, 810 Schreider St, Suite 100, Fort Detrick, Maryland 21702 or via email to FortDetrick_NEPA@usace.army.mil. The EA was also sent to federal, state, and local agencies for comment and agency responses are located in Appendix A: Agency and Public Coordination.

3 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The Proposed Action must include the treatment and disposal of RMW generated at Fort Detrick in an environmentally sound manner that adheres to safety, security, and environmental regulations. RMW that requires disposal is autoclaved prior to shipment to a permitted incineration facility. The medical waste incinerator must have the capacity to heat the medical waste to 1700 - 1900 degrees Fahrenheit, with anticipated normal operating temperatures at approximately 1850 degrees Fahrenheit. After incineration, the remaining ash must be removed from the incinerator and disposed of properly in a landfill.

The Preferred Alternative will be chosen based on the evaluated environmental, cultural, socioeconomic impacts, as well as compliance with state and federal regulatory requirements. The Preferred Alternative will also meet the mission requirements at Fort Detrick. Feasible alternatives are evaluated in this EA.

3.1 Alternatives Considered

3.1.1 Build a New Incinerator Facility at a New Location

The resumption of onsite incineration with the design, construction and operation of a new HMIWI facility on available, buildable, previously disturbed land in proximity to the contributing research facilities. The new HMIWI facility would be approximately 10,000 sq ft, approximately one-third the size of the previous incinerator building, and have two HMIWI units that would meet all applicable installation, local, state, and federal laws and regulations, and would be used to treat RMW generated at Fort Detrick. This project includes building information systems, fire protection and alarm systems, and energy monitoring control systems connections for the proposed HMIWI facility. Each of the two HMIWI units would be operated independently, and under normal conditions would not be operated simultaneously. In the event of an emergency constituting the need to operate the two HMIWI units simultaneously, an authorization from the permitting agency would be required.

The new building would be architecturally similar to surrounding buildings and would have at least one smokestack. This alternative would keep all RMW generated on Fort Detrick on-site, which would reduce the transportation of the waste on public roads and reduce the public's exposure to hazardous materials, which is beneficial to health and human safety. Building and operating a new, state-of-the-art medical waste incinerator would generate lower air emissions than was generated from the incinerators operating on site from 1995 to 2018.

This alternative is evaluated in this EA.

3.1.2 No-Action Alternative

The CEQ requires the analysis of the No Action Alternative even if the agency is under legislative command to act. Analysis of the No Action Alternative provides a benchmark for enabling decision-makers to compare the magnitude of environmental effects of the other action alternatives.

The no action alternative is to continue to utilize contracted services to pick up and transport decontaminated RMW to the incineration plant at Curtis Bay in Baltimore, MD. This action would not address the potential for an accident during transport.

This alternative is evaluated in this EA.

3.2 Alternatives Eliminated from Detailed Study

As required by NEPA, potential alternatives must be considered. Alternatives to be evaluated must be economically feasible, able to be implemented, and meet the purpose and need for the Proposed Action. Alternative that were considered, but eliminated from further consideration are evaluated below.

3.2.1 Replace Legacy Incinerator

This alternative includes utilizing the legacy incinerator's existing building but would replace the existing incinerator with a new one. The existing incinerator would be dismantled and removed, and a new incinerator that meets all current local, state, and federal laws and regulations for compliance would be built in its place. This alternative was rejected because the existing building would not be able to accommodate the installation of the new state-of-the-art HMIWI and the additional environmental controls required, and still be in compliance with state and federal laws and regulations and the stringent monitoring requirements. Also, the location of the building is in close proximity to Fort Detrick's border fenceline, which may pose a security risk. Thus, this alternative was eliminated from further consideration.

This alternative is not evaluated in this EA.

3.2.2 Build New Incinerator at Legacy Location

This alternative includes utilizing the existing incinerator's building location but would involve a new building and new incinerator. The old building and incinerator would be demolished, and a new appropriately sized building and HMIWI that meets all applicable local, state, and federal laws and regulations would be designed and built at that same location. This alternative was rejected because demolishing the old building then building a new building in its place adds a significant amount of time and cost and is therefore not a cost-effective alternative. In addition, the location of the legacy incinerator building is father from the laboratory's that utilize the incinerator, and father from the landfills used for ash disposal than the proposed new building

location. Also, the location of the building is in close proximity to Fort Detrick's border fenceline, which may pose a security risk. Thus, this alternative was eliminated from further consideration.

This alternative is not evaluated in this EA.

3.2.3 Installation of a Distributed Incinerator System at Source Locations

This alternative includes the installation of a distributed incinerator system. The new, appropriately sized RMW incinerators would be deployed to individual RMW generating laboratories, and would meet all applicable local, state, and federal laws and regulations. This alternative was rejected because it would be inefficient, as it would require multiple incinerators running in regulatory compliance simultaneously. Multiple incinerator locations would have increased staffing and operating costs with expanded regulatory compliance requirements at multiple locations instead of a single location, which was not considered an efficient, cost-effective alternative. Thus, this alternative was eliminated from further consideration.

This alternative is not evaluated in this EA.

3.2.4 Repair the Legacy Incinerator

This alternative would include repairing the legacy incinerator using the existing scrubber/coal technology (atypical) in the existing closed facility. This alternative was rejected because of the difficulties in maintaining compliance while operating the antiquated technology. Also, the location of the building is in close proximity to Fort Detrick's border fenceline, which may pose a security risk. Thus, this alternative was eliminated from further consideration.

This alternative is not evaluated in this EA.

4 EXISTING CONDITIONS

This section of the EA describes the existing conditions of the natural and socioeconomic resources affected by the Proposed Action. Each environmental, cultural, and social resource category typically considered in an EA was reviewed for its applicability to be affected by the Proposed Action. For the purpose of describing existing conditions and environmental effects, the area of influence encompasses each of the two study areas previously described.

4.1 Land Use

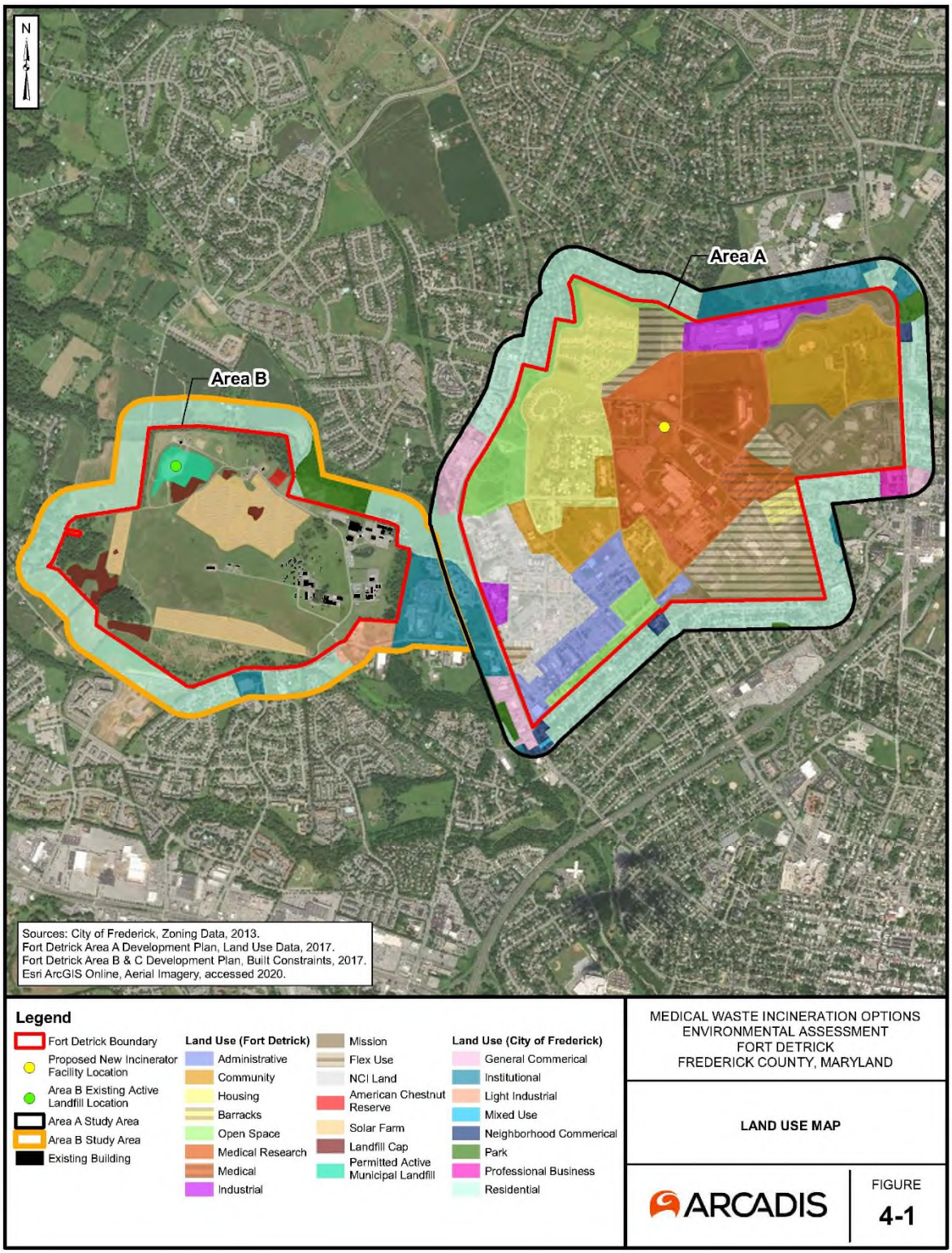
Fort Detrick, which is situated within the limits of the City of Frederick, Frederick County, Maryland maintains its own land use planning, which is designed to conform and complement local community planning to the maximum extent possible (USAG, 2019). Although the Installation is located within the city limits of Frederick, local land use regulations are not binding (USAG, 2010b). Fort Detrick is primarily surrounded by medium to low density residential development as well as Frederick County Community College. Area A of Fort Detrick is approximately 797 acres and is the largest and most intensively developed area, comprised of administrative buildings, community service facilities, recreation areas, advanced research and development complexes, communications facilities, and military and family housing units (USAG, 2019).

The construction of a new medical waste incinerator is addressed in concept within the October 2018 Final Fort Detrick Area A Area Development Plan (ADP). Existing land uses within the two study areas are shown on **Figure 4-1**.

4.1.1 Land Use Controls

Fort Detrick's Installation Action Plan (IAP) outlines the total multiyear cleanup program for the installation. The plan identifies environmental cleanup requirements at each site or area of concern (AOC), and proposes a comprehensive, installation-wide approach, along with the costs and schedules associated with conducting investigations and taking the necessary remedial actions (RA). The IAP incorporates several Land Use Controls (LUC) and land use restrictions for areas included in the IAP, including media specific restrictions which serve to prohibit, or otherwise manage excavation, and landfill restrictions, prohibiting activities that would impact landfill caps or cover systems and associated drainage systems (USAG, 2019). In addition, Fort Detrick has an active environmental restoration program to investigate and clean-up past activities that have resulted in environmental contamination. The Superfund Amendments and Reauthorization Act of 1986 (10 U.S.C. 2701) requires DOD to carry out its Defense Environmental Restoration Program in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, commonly referred to as Superfund (42 U.S.C. 9620).

Figure 4-1: Land Use Figure



4.2 Air Quality

4.2.1 National Ambient Air Quality Standards and Attainment Status

The United States Environmental Protection Agency (USEPA) Region 3 and the Maryland Department of the Environment (MDE) regulate air quality in Maryland. The CAA (42 U.S.C. §7401–7671q), as amended, gives USEPA the responsibility to establish the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) acceptable concentration levels for seven criteria pollutants:

- Particulate matter less than 10 microns (PM_{10})
- Particulate matter less than 2.5 microns ($PM_{2.5}$)
- Sulfur dioxide (SO_2)
- Carbon monoxide (CO)
- Nitrogen dioxide (NO_2)
- Ozone (O_3)
- Lead (Pb)

Short-term standards (i.e., 1-, 8-, and 24-hour periods) have been established for pollutants that contribute to acute health effects, while long-term standards (i.e., annual averages) have been established for pollutants that contribute to chronic health effects. These standards identify the maximum allowable concentrations of criteria pollutants that regulatory agencies consider safe, with an additional adequate margin of safety to protect human health and welfare. Each state has the authority to adopt standards stricter than those established under the Federal program. MDE is responsible for maintaining air quality standards for the State of Maryland and has adopted the NAAQS.

Primary and secondary NAAQS for the aforementioned criteria are described in **Table 4-1**. The attainment status of Frederick County is included, for that is where all project activities would take place. Areas that exceed the NAAQS ambient concentration are labeled as nonattainment areas and are designated as such in accordance with federal regulations. According to the severity of the pollution problem, areas exceeding the established NAAQS are categorized as marginal, moderate, serious, severe, or extreme nonattainment or maintenance areas.

Table 4-1: National Ambient Air Quality Standards

Pollutant	Standard	Averaging Time	Ambient Concentration	Frederick County Attainment Status
CO	Primary	1-hour[a] (ppm)	35	Attainment
		8-hour[a] (ppm)	9	
NO_2	Primary	1-hour[b] (ppm)	100	Attainment
	Primary and Secondary	Annual[c] (ppm)	53	
O_3	Primary and Secondary	8-hour[d](ppm)	0.070	Nonattainment
SO_2	Primary	1-hour[e] (ppb)	75	Attainment
	Secondary	3-hour[a] (ppm)	0.5	
$PM_{2.5}$	Primary and Secondary	24-hour[f] ($\mu g/m^3$)	35	Attainment
	Primary	Annual arithmetic mean[g] ($\mu g/m^3$)	12	
	Secondary	Annual arithmetic mean[g] ($\mu g/m^3$)	15	
PM_{10}	Primary and Secondary	24-Hour[h] ($\mu g/m^3$)	150	Attainment

Source: 40 CFR 50.1-50.12; USEPA, 2015
CO = carbon monoxide; $\mu g/m_3$ = micrograms per cubic meter; NAAQS = National Ambient Air Quality Standards; NO_2 = nitrogen dioxide; O_3 = ozone; ppb = parts per billion; ppm = parts per million; $PM_{2.5}$ = particulate matter less than 2.5 microns; PM_{10} = particulate matter less than 10 microns; SO_2 = sulfur dioxide
a Not to be exceeded more than once per year.
b 98th percentile, averaged over 3 years.
c Annual mean.
d Annual fourth highest daily maximum 8-hour average O_3 concentrations, averaged over 3 years.
e The 3-year average of the 99th percentile of 1-hour daily maximum concentrations.
f The 3-year average of the 98th percentile of 24-hour concentrations.
g The 3-year average of the weighted annual mean.
h Not to be exceeded more than once per year, on average over 3 years.

Fort Detrick is within the Central Maryland Intrastate Air Quality Control Region. The region is in compliance with all pollutants except for 8-hour O_3, which is in marginal nonattainment for the 2015 8-hour O_3 standards (USEPA, 2020). Additionally, Frederick County is within the O_3 transport region that includes 28 states and Washington, D.C.

MDE develops air quality plans, referred to as State Implementation Plans (SIPs), that are designed to attain and maintain the NAAQS, and to prevent significant deterioration of air quality in areas that meet NAAQS standards. Maryland has individual SIPs for various pollutants, including NO_2, $PM_{2.5}$, 8-hour O_3, regional haze, lead, etc. Federal agencies must ensure that their actions conform to the SIP in a nonattainment area, and do not contribute to new violations of ambient air quality

standards or an increase in the frequency or severity of existing violations, or a delay in timely state and/or regional attainment standards.

Fort Detrick holds a Title V air operating permit (permit number 24-021-00131) which expires on August 31, 2020 (MDE, 2015). A renewal application for the Title V permit was submitted to MDE in August 2019 and is currently being reviewed and processed by the agency. A Title V permit is required because facility-wide NOx emissions exceed 25 tons per year, the major source threshold for NOx in the ozone nonattainment area. The permit includes applicable regulations and compliance requirements for the following permitted emissions sources at Fort Detrick: 22 boilers, 16 emergency power generators, 4 incinerators (2 municipal solid waste / 2 HMIWI), and 2 gasoline storage tanks. Between 2017 and 2019, eight boilers were replaced with new units and 15 additional boilers were installed at the facility for a total of 37 boilers that will appear in the renewed Title V permit. Fort Detrick is required to provide annual emission certification reports as a requirement of their Title V permit. The combined criteria pollutant emissions reported for all the facility permitted sources for the years 2014 through 2019 are denoted in **Table 4-2**.

Table 4-2: Criteria Pollutant Emissions for Fort Detrick (2014 through 2019)

Year	NO_x	SOx	PM_{10}	CO	VOC
	(tons per year)				
2014	42.6	10.3	6.3	20.4	2.7
2015	43.5	15.7	10.4	21.8	2.7
2016	34.2	15.7	2.0	20.1	2.6
2017	25.8	7.4	1.2	6.5	1.9
2018	30.4	0.7	2.3	14.2	3.1
2019	41.3	3.5	21.6	28.4	3.3

NOx = nitrogen oxides; SOx = sulfur oxides; PM10 = particulate matter less than 10 microns; CO = carbon monoxide; VOC = volatile organic compound

Source: Fort Detrick 2020

Any new regulated air emission activity that would be conducted at the facility will require an air permit to construct and a modification to the facility's Title V permit. The construction permit application should demonstrate compliance with MDE's applicable control regulations. Some sources are also subject to technology-based standards which apply to specific categories of stationary sources, referred to as New Source Performance Standards (NSPS) found in 40 CFR Part 60. NSPS apply to new, modified and reconstructed affected facilities and provide emission limits, monitoring, recordkeeping, and reporting requirements for affected sources. Sources subject to NSPS may require an initial performance test or utilize continuous emission monitors or monitor control device operating parameters to demonstrate compliance with the rule.

4.2.2 Regulatory Requirements for Hazardous Air Pollutants

In addition to criteria pollutant standards, the USEPA also regulates hazardous air pollutant (HAP) emissions for each state. HAPs differ from criteria pollutants for they are known or suspected to cause cancer and other diseases or have adverse environmental impacts. The National Emission Standards for HAPs (NESHAP) found in 40 CFR Part 63 regulate 187 HAPs that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. NESHAP requires application of technology-based emissions standards referred to as Maximum Achievable Control Technology (MACT).

Sources of HAP emissions at Fort Detrick include the boilers, incinerators, fuel storage tanks, and generators. Fort Detrick is an existing minor source of HAPs, meaning total annual emissions of any single HAP are less than 10 tpy and annual emissions of combined HAP are less than 25 tpy. The actual emissions reported for HAPs for the years 2014 through 2019 as provided in the Fort Detrick's Title V permit are less than 2 tpy.

4.2.3 Regulatory Requirements for Toxic Air Pollutants

The MDE toxic air pollutant (TAP) regulations were promulgated in September 1988 to protect the public from TAP emissions from stationary sources of air pollution. These regulations, while not unique in structure to other programs in the United States, are noteworthy due to the number of pollutants considered and the number of sources subject to them. For new sources (constructed or reconstructed after July 1, 1988), a TAP is any of the listed pollutants in Code of Maryland Regulations (COMAR) 26.11.16.06 and .07 plus any other air pollutant that is considered a health hazard, as defined by the Occupational Safety and Health Administration (OSHA). All new sources of TAPs in Maryland will require an air permit to construct and must apply the best available control technology for toxics (T-BACT). T-BACT is a top-down demonstration of control strategies (including pollution prevention techniques) for the equipment starting with the most effective strategy. The new sources must also demonstrate that the facility-wide TAP emissions will not adversely affect public health by complying with the benchmarks called screening levels. Screening levels are based on safe worker exposure levels with an added factor of safety to protect against multiple sources and more sensitive individuals. Public health is protected when the emissions of a facility are less than the maximum allowable emissions or when off-site impact of the facility-wide emissions of each TAP is less than the screening levels for the TAP, or as determined by air dispersion modeling, if required.

4.2.4 Clean Air Act Conformity

The 1990 amendments to the CAA require Federal agencies to ensure that their actions conform to the SIP in a nonattainment area. The purpose of the General Conformity Rule is to ensure that:

- federal activities do not cause or contribute to new violations of NAAQS;

- actions do not worsen existing violations of the NAAQS; and
- attainment of the NAAQS is not delayed.

USEPA has developed two distinctive sets of conformity regulations: one for transportation projects and one for non-transportation projects. Non-transportation projects are governed by general conformity regulations (40 CFR 93). Pursuant to 40 CFR 93(b), a conformity determination is required for each criteria pollutant or precursor where the total of direct and indirect emissions of the criteria pollutant or precursor in a nonattainment or maintenance area caused by a Federal action would equal or exceed threshold emissions levels provided under 40 CFR 93 (b)(1) or (2).

The Proposed Action is a non-transportation project within a O_3 nonattainment area. Due to the proximity to the urbanized east coast of the United States, Frederick County is considered an Ozone Transport Region. The Ozone Transport Region has a moderate ozone nonattainment classification by definition. Because ozone formation is driven by other direct emissions, the air quality analyses focus on ozone precursors that include VOCs and NO_x. For an area in moderate nonattainment for the 8-hour O_3 NAAQS within the O_3 transport region, the applicability criteria are 100 tpy for NO_x and 50 tpy for VOCs (40 CFR 93.153(b)(1)).

Routine operation of facilities, mobile assets and equipment are exempt from the General Conformity Rule in accordance with 40 CFR 93.153(c)(2)(xiii). Therefore, operational emissions from Fort Detrick need not be included in the applicability analysis. Pursuant to 40 CFR 93.153(d)(1), a conformity determination is not required for the portion of an action that includes major or minor new or modified stationary sources that require a permit under the new source review program or the Prevention of Significant Deterioration (PSD) program. Therefore, emissions from the routine operations of the new HWIMIs need not be included in the applicability analysis.

The General Conformity Rule also prohibits any department, agency, or instrumentality of the Federal Government from engaging in, providing financial assistance for, approving, or supporting any activity that does not conform to applicable SIP designated for areas being in nonattainment of established NAAQS.

4.2.5 Greenhouse Gas Emissions

Greenhouse gases (GHGs) are a particular group of gases that have the ability to trap heat by absorbing infrared radiation in the atmosphere. Scientific evidence indicates a trend of increasing global temperature over the past century which may be due to an increase in GHG emissions from human-based activities. The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide. The main source of GHGs from human activities is the combustion of fossil fuels, including natural gas, diesel fuel, gasoline, and coal. Other examples of GHGs created and emitted primarily through human-based

activities include fluorinated gases (hydrofluorocarbons and perfluorocarbons) and sulfur hexafluoride.

Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO_2, which has a value of one. For example, CH_4 has a GWP of 25, which means that it has a global warming effect 25 times greater than CO_2 on an equal-mass basis.

To simplify GHG analyses, total GHG emissions from a source are often expressed as a CO_2 equivalent (CO_2e). The CO_2e is calculated by multiplying the emissions of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs. While CH_4 and nitrous oxide have much higher GWPs than CO_2, CO_2 is emitted in such higher quantities that it is the overwhelming contributor to CO_2e from both natural processes and human activities.

4.2.5.1 Regulatory Review and Permitting

Currently the USEPA has two primary groups of GHG regulations for regulated stationary emission sources:

- 40 CFR Part 98 - requires annual GHG emissions reporting and applies to fossil fuel suppliers and industrial gas suppliers, facilities that inject CO_2 underground for sequestration or other reasons, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and engines. The rule does not require control of GHGs, rather it requires only that certain sources emitting 25,000 metric tons CO_2e or more per year monitor and report emissions.
- 40 CFR Parts 51, 52, 60, 70 and 71 – establish CO_2 emission limits to be addressed in PSD and Title V permits required for electric utility generating units that are major stationary sources for regulated pollutants other than GHG. A 75,000 tpy threshold is used by EPA as a de minimis value to determine whether a PSD permit must include an emission limitation for CO_2 and a 100,000 tpy threshold is applied for Title V permits.

Fort Detrick is not a PSD major source (single criteria pollutant emissions at or above 250 tpy) and historical facility wide GHG emissions are well below 75,000 tpy, so the facility has not triggered PSD requirements for GHG emissions. Pursuant to the Title V permit, Fort Detrick already reports their GHG emissions to the USEPA. The combined GHG emissions reported for all the facility permitted sources for the years 2014 through 2019 are denoted in **Table 4-3**.

Table 4-3: Greenhouse Gas Emissions for Fort Detrick (2013 through 2019)

Year	CO_2e (Metric Tons per year)
2013	36,487
2014	21,361
2015	24,374
2016	1,015
2017	4,482
2018	8,091
2019	No report required because emissions < 25,000 metric tons per year for 5 years

CO_2e – Carbon dioxide equivalent

Source: Fort Detrick 2020a

The Council on Environmental Quality (CEQ) provides guidance to Federal agencies on how to evaluate GHGs for federal actions under NEPA. The current CEQ guidance is a draft document published in the Federal Register on June 26, 2019 titled "Draft NEPA Guidance on Consideration of GHG Emissions" that proposes a streamlined approach to analyzing the impacts of GHGs under NEPA. The draft guidance notes (CEQ 2019):

- Agencies should quantify a project's projected direct and reasonably foreseeable indirect GHG emissions when emissions are "substantial enough to warrant quantification," and when it is "practicable" to do so using available data and GHG quantification tools. The guidance stresses that agencies should consider whether quantification of GHG emissions "would be overly speculative" or where necessary information is "not of high quality."
- The guidance does not address what "substantial" means, however it notes that following the "rule of reason," there must be a close causal relationship between potential impact and anticipated GHG emissions to include GHG emissions in the analysis.
- Agencies are not required to prepare separate cumulative effects analyses, nor undertake new research or analysis of climate effects.
- Although NEPA requires agencies to consider reasonable alternatives to the proposed action, they are not required to adopt mitigation measures.
- Finally, the 2019 draft guidance clarifies that federal agencies are not required to monetize the costs and benefits of a proposed project, and specifically, the social cost of carbon (SCC) need not be considered.

4.2.5.2 Executive Orders and Federal Laws

In April 2007, the U.S. Supreme Court determined that the USEPA has the regulatory authority to list GHGs as pollutants under the federal CAA (USEPA 2007).

Additionally, federal agencies address emissions of GHGs by reporting and meeting reductions mandated in laws, executive orders, and policies. Relevant to GHGs is EO 13834, *Efficient Federal Operations*, of May 17, 2018.

The Energy Policy Act of 2005, Energy Independence and Security Act of 2007, and EO 13834 require an installation to adhere to specific energy improvements, which address waste reduction and improvements in efficiency. Specifically, the DoD Strategic Sustainability Performance Plan contains strategies to reduce energy waste and improve efficiency (DoD, 2016).

4.3 Hazardous and Toxic Materials, and Solid Wastes

A hazardous substance is defined as any substance that is:

1) listed in Section 101(14) of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA);

2) designated as a biologic agent and other disease causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such persons or their offspring;

3) listed by the U.S. Department of Transportation (DOT) as hazardous materials under 49 CFR 172.101 and appendices; or

4) defined as a hazardous waste per 40 CFR 261.3 or 49 CFR 171 (USAG, 2019a).

The Occupational Safety and Health Administration’s (OSHA's) definition of hazardous substance includes any substance or chemical which is a "health hazard" or "physical hazard," including: chemicals which are carcinogens, toxic agents, irritants, corrosives, sensitizers; agents which act on the hematopoietic system; agents which damage the lungs, skin, eyes, or mucous membranes; chemicals which are combustible, explosive, flammable, oxidizers, pyrophorics, unstable-reactive or water-reactive; and chemicals which in the course of normal handling, use, or storage may produce or release dusts, gases, fumes, vapors, mists or smoke which may have any of the previously mentioned characteristics. (Full definitions can be found at 29 CFR 1910.1200.) (USAG, 2019a)

USEPA incorporates the OSHA definition for hazardous substance and adds any item or chemical which can cause harm to people, plants, or animals when released by spilling, leaking, pumping,

pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping or disposing into the environment (40 CFR 355).

The DOT defines a hazardous material as any item or chemical which, when being transported or moved in commerce, is a risk to public safety or the environment, and is regulated as such under its Pipeline and Hazardous Materials Safety Administration regulations (49 CFR 100-199), which includes the Hazardous Materials Regulations (49 CFR 171-180). In addition, hazardous materials in transport are regulated by the International Maritime Dangerous Goods Code; Dangerous Goods Regulations of the International Air Transport Association; Technical Instructions of the International Civil Aviation Organization; and U.S. Air Force Joint Manual, Preparing Hazardous Materials for Military Air Shipments (USAG, 2019a).

The NRC regulates materials that are considered hazardous because they produce ionizing radiation, which means those materials that produce alpha particles, beta particles, gamma rays, x-rays, neutrons, high-speed electrons, high-speed protons, and other particles capable of producing ions. This includes "special nuclear material," by-product material, and radioactive substances. (See 10 CFR 20).

Fort Detrick follows the U.S. Army's Hazardous Materials Management Policy (HMMP) that fulfills the requirements of the Federal, state, and Army regulations as specified therein. (DA, 2010). The manual includes procedures for maintaining inventory data and for procuring, receiving, and tracking hazardous materials. In addition, Fort Detrick fulfills all requirements of the following federal, state, and Army regulations including:

Federal:

- Comprehensive Environmental Response, Compensation, and Liability Act
- Superfund Amendments and Reauthorization Act (SARA)
- Toxic Substances Control Act
- Occupational Safety and Health Administration Hazard Communication Standard
- 29 CFR 1910.1200, Hazard Communication Standard, 2001
- EO 12580. Superfund Implementation
- Hazardous Waste Regulations (40 CFR Parts 260-279)
- Superfund Amendments and Reauthorization Act (Public Law 99-499)
- Spill Prevention, Control, and Countermeasure Rule (40 CFR Part 112)
- OSHA Hazardous Waste Operations and Emergency Response standard (29 CFR 1910.120 and 1926.65)
- Federal Acquisition Regulation

State:

- COMAR10.06.06, Communicable Disease Prevention – Handling, Treatment, and Disposal of Special Medical Waste
- COMAR 10.10.11, Biological Agents Registry Program
- COMAR 26.13.11, Special Medical Wastes

- COMAR 26.13.12, Standards Applicable to Generators of Special Medical Waste
- COMAR 26.13.13, Standards Applicable to Transporters of Special Medical Waste
- COMAR 26.13.03 Standards Applicable to Generators of Hazardous Waste

Army/DoD:

- DoD Directive 4140.25M, Procedures for the Management of Petroleum Products
- DoD Directive 4150.7, Pest Management Program
- DoD Directive 5030.41, Oil and Hazardous Substances Pollution Prevention and Contingency Program
- Army Regulation 200-1 Environmental Protection and Enhancement
- AR 700-141, Hazardous Materials Information Resource System
- MEDCOM Regulation 40-35
- Fort Detrick Integrated Solid Waste Management Plan

Specific hazardous material guidance is also covered in AR 200-1 which establishes policies and procedures to protect the environment, including environmental responsibilities for the Department of the Army (DA), major commands, and installations. It directs Army staff to follow applicable environmental regulations of final governing standards and Army environmental quality policies pertaining to the Emergency Planning and Community Right-to-Know Act, RCRA, and CERCLA, also known as the Federal Superfund Law. It also defines the Army's goal of continually managing and reducing the generation of hazardous waste, through waste identification and disposal, records management, and training programs (USAG 2019).

4.3.1 Hospital, Medical, and Infectious Waste

All regulated medical waste generated at Fort Detrick is managed in accordance with Biosafety in Microbiological and Biomedical Laboratories (BMBL) guidelines and applicable Federal, DA, USAG, and state regulations for the protection of transporters and the public from potential hazards associated with potential contaminants (USAG, 2019). Special Medical Waste, as defined under COMAR 26.13.11.02 includes anatomical material, blood, blood-soiled articles, contaminated material (microbiological laboratory waste, feces of an individual diagnosed as having a disease that may be transmitted to another human being through the feces, or articles that have come into contact with a known infectious agent), microbiological laboratory waste (containing an infectious agent and including cultures or stocks of infectious agents and associated biologicals), and sharps (syringes, needles, surgical instruments, or other articles capable of cutting or puncturing human skin) (USAG, 2019). Treatment (disinfection) of special medical waste and disposal by incineration at Fort Detrick are in accordance with COMAR 10.06.06.04 and 10.06.06.06, respectively (USAG, 2019), and MEDCOM Regulation 40-35.

Fort Detrick operated two hospital, medical and infectious waste incinerators under Refuse Disposal Permit No. 2015-WIN-0341 issued by the MDE WMA effective through 24 March 2021 and CAA Title V Part 70 Operating Permit (No. 24-021-00131) issued by MDE ARMA effective

through 31 August 2020. Each medical waste incinerator had a capacity of 1,000 lbs (0.5 tons) per hour. The medical waste incinerators were operated 8 hours a day, 5 days a week, and disposed of an average of approximately 3 tons of regulated medical waste per day. Typically, one medical waste incinerator was in operation while the other was down for routine maintenance, although both of them could be operated at the same time and up to 24 hours per day under the permit conditions (USAG, 2006).

As stated previously, until 2018 Fort Detrick was operating two antiquated HMIWIs when the Garrison Commander ceased operations due to aging equipment. Fort Detrick implemented its contingency plan and began sending the generated RMW, via contractor, to an off-site regulated medical waste incinerator. This situation is current as of the preparation of this EA document.

4.3.2 Hazardous Waste

Under the provisions of RCRA, Area A of Fort Detrick is registered as a large quantity generator of hazardous wastes (EPA Identification (EPA ID) No. MD8211620267). This EPA ID No. applies only to hazardous waste generated on the Army-owned portion of Area A. Separate EPA ID numbers have been issued by the EPA to the USAG for Area B, and to the National Cancer Institute at Frederick (NCI-Frederick) portion of Area A. Additional tenants (National Institute of Allergy and Infectious Diseases (NIAID) lab and Central Utility Plant (CUP)) of Area A are separately registered with EPA. RCRA is administered in Maryland by the MDE Hazardous Waste Program through regulatory requirements for Controlled Hazardous Substances (COMAR 26.13) (USAG, 2019).

There are two less than 90-day hazardous waste storage sites on the Army-owned portion of Area A. The less than 90-day site at Building 262 is operated by the Garrison's Hazardous Materials Management Operation (HMMO). A new less than 90-day hazardous waste storage location, Building 9255, was constructed to replace Building 262. Building 9255 will be in operation in the Spring of 2020. There is also a less than 90-day site operated by USAMRIID at Building 1425. Within 90 days after the accumulation start date (the date that a hazardous waste leaves the Satellite Accumulation Point (SAP)), the hazardous waste must be removed from the Installation for shipment to a properly permitted offsite Treatment, Storage, and Disposal Facility (TSDF). The Garrison contracts with the Defense Reutilization Marketing Office for the transportation, and disposal of hazardous waste. The hazardous waste must be packaged in accordance with the U.S. DOT regulations (49 CFR 171-179), Operational Services Command (OSC), Federal, state, and TSDF requirements (USAG, 2019).

In most cases, hazardous waste is taken to the Garrison's less than 90-day hazardous waste storage site prior to being transported from Fort Detrick.

The chlorinated solvents trichloroethylene (TCE) and perchloroethylene (PCE) were used for degreasing operations on Area A. Records identified the use of TCE in three Area A buildings for

refrigeration and/or freeze-drying purposes for test chambers and other activities dating back to the 1960s. Accidental leaks or spills from a refrigeration operation in Building 568 resulted in TCE contamination of groundwater on Area A (USAG, 2019).

4.3.3 Solid Waste

Fort Detrick constructed a lined sanitary landfill that began operation in October 1990 (Frederick County, 2019). The Fort Detrick landfill (MDE Permit No. 2015-WMF-0327), located in Area B, is licensed to accept non-hazardous solids wastes (Frederick County, 2019). Following the cease in operations of Fort Detrick's former on-site Municipal Waste Combustion systems, Fort Detrick had been using its on-site landfill for the disposal of Municipal Solid Waste (MSW) generated and originating on Fort Detrick (Frederick County, 2018). Fort Detrick then requested permission to use the County-owned waste disposal facilities for municipal waste. According to a memorandum from the Frederick County Division of Utilities and Solid Waste Management (DUSWM) to the Frederick County Council on August 27, 2018, an Intergovernmental Support Agreement (IGSA) between USAG Fort Detrick and Frederick County was executed to provide installation support and services, specifically for the interim disposal of MSW generated by Fort Detrick to the County's disposal facilities located at Reichs Ford Road Landfill and Recycling Center (Frederick County, 2018). The Frederick County Solid Waste Management Plan (SWMP) recognized Fort Detrick as a separate entity within the County, with its own waste disposal systems that did not rely on the County's waste disposal infrastructure. Therefore, an amendment to the County's SWMP was necessary before Fort Detrick could use the County's MSW disposal facilities on a permanent basis, which is a requirement pursuant to the IGSA (Frederick County, 2018). The proposed changes to the Frederick County SWMP were reviewed with the County's Solid Waste Advisory Committee (SWAC) and approved by SWAC on August 1, 2018 (Frederick County, 2018). The Frederick County Planning Commission, at their regular public meeting on September 19, 2018 reviewed and approved the proposed amendment to the County's SWMP (Frederick County, 2018a). The Frederick County Council, at a Public Hearing held on October 16, 2018, approved Resolution 18-26 regarding proposed amendments to the 2018-2037 Frederick County Solid Waste Management Plan to include Fort Detrick as a source of municipal solid waste disposal at the Frederick County Landfill (Frederick County, 2018b). According to the amendments to the Frederick County SWMP, Fort Detrick may bring certain types of acceptable MSW to Frederick County's waste management facilities for either landfill disposal or transfer and disposal (Frederick County, 2019). Fort Detrick ceased utilizing the Area B for landfilling of municipal wastes on February 13, 2019.

4.3.4 Wastewater

Fort Detrick owns and operates a wastewater treatment plant (WWTP) for the treatment of sanitary wastewater generated and collected throughout the installation. Fort Detrick maintains the sanitary

sewer collection system that conveys wastewater to the WWTP. This wastewater is pumped northeastward approximately 2.4 miles to the WWTP, which is located on Area C, via two parallel 12-inch pipelines. Fort Detrick has the ability to divert a portion of the sanitary wastewater generated at the installation to the City of Frederick WWTP through an emergency bypass. The WWTP has sufficient capacity under the NPDES permit to treat up to 730 million gallons per year of wastewater generated by activities at Fort Detrick. The WWTP treated approximately 391 million gallons in FY 2019. The daily sanitary wastewater flows are well within the maximum WWTP capacity (2.0 mgd average daily flow) under NPDES Wastewater Discharge Permit No. MD0020877. The Fort Detrick WWTP discharges treated wastewater into the Monocacy River, a tributary of the Potomac River, which eventually empties into the Chesapeake Bay. The Fort Detrick WWTP was upgraded in 2011 with Enhanced Nutrient Removal (ENR) technologies to meet the 2010 goals set in the Chesapeake Bay Agreement. The new agreement sets nutrient loading goals of 4.0 milligrams per liter (mg/L) for nitrogen and 0.3 mg/L for phosphorus for WWTPs with a design capacity at or above 0.5 mgd. Effluent wastewater from the sanitary sewer system flows sequentially through the headworks facility, oxidation ditch, two secondary clarifiers, ultraviolet disinfection, and additional phosphorus filtration prior to discharge to the Monocacy River. The WWTP outfall is downstream from both the City of Frederick WTP and Fort Detrick WTP water intakes.

Wastewater from area B is pumped to Area A where it enters the sanitary sewer system and continues as part of the scenario described above.

4.3.5 Pesticides

Small field research crops formerly existed on Fort Detrick Area A for many years, including row crops, weed species, and a vegetable garden. A broad spectrum of pesticides (mainly herbicides) were applied over the years, but should be thoroughly degraded by exposure to sun, heat and rain (Boggs, 2018).

4.3.6 Existing Contamination

4.3.6.1 Fort Detrick Area A

A historical release of TCE occurred at Building 568 in the southwestern portion of Area A of Fort Detrick. TCE was used at this building as a refrigerant, however, the refrigeration system was removed between 1970 and 1971. There were no visible leaks upon removal. The quantity of TCE is unknown, however, leaks of mechanical seals were documented as early as 1964 (Boggs, 2018). A known groundwater plume with TCE exists in the area of Building 568. A groundwater production well (with one backup well) is used to supply water for aquatic biological laboratories housed in Building 568. Groundwater flow in Area A trends southwest from Building 568 toward Carroll Creek, intersecting Carroll Creek slightly downstream of Area B's primary discharge area.

Area A's probable discharge area includes a grouping of springs (Spearmint, Upsurgent and Sewerline Springs) located just across Rosemont Avenue from Area A's south corner (USACE, 2019).

Groundwater investigations at Area A have identified a plume comprised primarily of TCE and chloroform migrating southwest from Building 568 (USACE, 2019). While concentrations have declined significantly over the monitoring period, low concentrations of VOCs are still detected in two separate plume lobes: a southern lobe trending toward Spearmint, Upsurgent and Sewerline Springs on Carroll Creek, and a northern lobe trending toward the Frederick County property north of Montevue Lane (USACE, 2019).

The Five-Year Review Report for Area A, Building 568 TCE Spill Site (FTD-66) was signed on 30 July 2019. The remedy at the Area A, Building 568 TCE Spill Site is protective of human health and the environment. The groundwater extraction system is operating and maintains hydraulic control, containing the dissolved TCE plume within the Area A boundaries. Containment of all concentrations of TCE associated with the TCE Spill Site is confirmed via ongoing monitoring. The next five-year review will be completed in 2024.

Industrial operations involving petroleum fuel storage, dispensing and use had associated infrastructure such as underground fuel lines, pumping/dispensing areas, and storage tanks [both above ground storage tanks (ASTs) and underground storage tanks (UST)]. As a result of infrastructure failure and accidental releases, Fort Detrick has a number of sites with historical petroleum contamination including gasoline releases from USTs associated with a former motor pool at Building 940 and No. 6 fuel oil from USTs at the Building 190 boiler plant (USAG, 2019).

In addition, nitrogen, phosphorus, and potassium based fertilizers, fast and slow release, were also applied over the years, but little (if any) residue is expected to remain since there has been grass and weed cover in place to remove most of the nutrients from the soil (Boggs, 2018).

4.3.6.2 Fort Detrick Area B

Fort Detrick Area B Groundwater is regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Fort Detrick Area B was proposed to be added to the National Priorities List (NPL) in 2008, as part of the NPL Proposed Rule #49 (73 FR 51393) due to groundwater contamination. In April 2009, the site was listed on the NPL. The terms of the NPL listing are described in a Federal Facilities Agreement between the U.S. Army and the U.S. Environmental Protection Agency (USEPA), signed in December 2010 (USACE, 2019). The principal environmental concerns at Area B relate to former waste disposal areas used by Fort Detrick when the installation served as a biological warfare research center, between 1943 and 1969. Concerns at Area B have historically been divided into 14 Operable Units (OUs), with 13 OUs encompassing Area B's known and suspected disposal sites, and one OU (FTD 72/OU-14) comprising all groundwater impacts associated with historical sources of contamination on Area

B. Investigation and remediation of the disposal areas (i.e., OU-1 through OU-13) was completed prior to the FTD 72/OU-14 NPL listing. Although much of the accessible waste material and impacted soils were removed in actions completed between 2001 and 2004, post-excavation sampling showed that high levels remained in soil that may act as a secondary source of contamination. That work culminated with a targeted source removal in one disposal site, and installation of impermeable landfill caps above each area where wastes were buried. Capping was completed by May 2010 (USACE, 2019).

A groundwater remedial investigation (RI) associated with Area B was performed in 2019 under the U.S. Army Installation Restoration Program for Area B Groundwater (FTD 72/OU-14) (USACE, 2019). The 2019 RI focused on describing field and laboratory work completed between 2011 and 2017, however, since 1977, more than 160 monitoring wells, including 106 bedrock wells, have been installed to investigate the groundwater beneath Area B. Groundwater samples at Area B were analyzed for a broad suite of contaminant classes, encompassing approximately 270 individual organic and inorganic analytes. Area B groundwater Constituents of Concern (COCs) included Volatile Organic Compounds (VOCs), Semi-volatile Organic Compounds (SVOCs), Metals, Pesticides, Dioxins, PCPs, Herbicides, Gross-Alpha, and Gross-Beta. The primary constituent in groundwater at Area B is trichloroethylene (TCE), however additional analytes were detected above criteria (USACE, 2019). The Western Disposal Area (WDA) of Area B is considered to be the primary source of groundwater contamination at Area B and is the most significant source of the majority of the COCs identified in the RI. However, for several constituents, additional sources exist, including other Area B sources (former disposal areas investigated prior to the 2019 RI) and unrelated offsite sources, including, but not limited to, chlorinated VOCs originated in Fort Detrick's Area A.

The DoD's Installation Restoration Program (IRP) was established to provide guidance and funding for the investigation and remediation of hazardous waste sites caused by historical disposal activities at military installations. Fort Detrick has an active IRP established and funded under the Defense Environmental Restoration Program (DERP). The IRP is a comprehensive program to identify, investigate and clean up hazardous substances, pollutants, and contaminants resulting from historical operations and practices on the installation. Although all investigations and clean-up activities are investigated under the CERCLA, also known as Superfund, only the Area B Groundwater site is included on the National Priorities List. CERCLA authorizes cleanup responses when there is a release or threat of a release of a hazardous substance into the environment resulting in unacceptable risks to the public or the environment and sets a framework for implementing those responses. Investigations and cleanup actions are coordinated with the USEPA and the MDE.

In addition, Fort Detrick has an active environmental restoration program to investigate and clean-up past activities that have resulted in environmental contamination. The Superfund Amendments and Reauthorization Act of 1986 (10 U.S.C. 2701) requires DOD to carry out its Defense

Environmental Restoration Program in accordance with CERCLA, as amended, commonly referred to as Superfund (42 U.S.C. 9620).

4.4 Human Health and Safety

A Human Health Risk Assessment (HHRA) was performed for Fort Detrick Area A as part of the 2000 RI to evaluate the potential human health effects associated with chemical contamination from past operations at Area A of Fort Detrick (USACE, 2000). For purposes of the HHRA, groundwater analytical results were evaluated in three data groupings: Building 568 Spill Site; Southwest & Boundary Well Locations; and Boundary Well AMW568-15A. The first two groundwater data groupings were used to represent on-site groundwater concentrations, while the Boundary Well AMW568-15A data grouping was used to represent worst-case off-site groundwater concentrations. Surface analytical results were evaluated in five data groupings: Cleanfill Area & Combustible Burn Pit; Building 568 TCE Spill Site; Water Towers; Pesticide/Herbicide Storage Building; and Car Wash Facility. Subsurface soil analytical results were evaluated in two data groupings: Cleanfill Area & Combustible Burn Pit and Building 568 TCE Spill Site (USACE, 2000). Using several screening procedures, Constituents of Potential Concern (COPCs) were selected for quantitative evaluation in each groundwater data grouping, in two of the surface soil data groupings, and in one of the subsurface soil data groupings (USACE, 2000). The Area A HHRA was performed for both (then) current and future land-use conditions. Under the (then) current land-use conditions, visitor exposures to surface soil via incidental ingestion, dermal absorption, and inhalation were evaluated. Under future land-use conditions, site worker exposures to surface soil via incidental ingestion, dermal absorption, and inhalation were evaluated. In addition, excavation worker exposures to subsurface soil via incidental ingestion and dermal absorption were evaluated (USACE, 2000). Hypothetical future off-site adult and child resident exposures to groundwater via ingestion, dermal absorption, and inhalation (excluding inhalation of volatile chemicals in groundwater by child residents) were also evaluated (USACE, 2000).

A HHRA was completed for the Area B 2019 RI and concluded that current conditions exceed USEPA's risk management thresholds in certain areas for several potential hypothetical exposures. The area with the most significant risk was defined as the western area of Area B, which includes the WDA. USEPA's risk management thresholds were exceeded in this western area for hypothetical future use of groundwater by residents as a source of drinking water, future potential exposures to a construction worker, and future indoor air exposures by hypothetical commercial workers or residents (USACE, 2019). USEPA's risk management thresholds were exceeded for hypothetical groundwater use within other portions of Area B, and the offsite property directly south of Area B adjacent to the WDA (referred to in the 2019 RI as the Shookstown Road exposure area). Outside of the western portion of Area B, risk of potential future indoor air exposure exceeds USEPA's risk management thresholds only in the central part of Area B, and the Shookstown

Road exposure area. TCE was the only risk driver identified. No significant risk or hazard associated with indoor air exposure was identified in other portions of the 2019 RI study area (USACE, 2019).

The HHRA also concluded that there is no significant risk or hazard associated with surface water or sediment anywhere within the 2019 RI study area, based on a range of potential exposure scenarios (USACE, 2019).

4.5 Noise

Noise is often defined as unwanted sound that interferes with normal activities in a way that reduces the quality of the environment. The human ear experiences sound as a result of pressure variations in the air. The physical intensity or loudness level of noise is expressed quantitatively as the sound pressure level. Sound pressure levels are defined in terms of decibels (dB), which are measured on a logarithmic scale. Sound can be quantified in terms of its amplitude (loudness) and frequency (pitch). Frequency is measured in hertz, which is the number of cycles per second. The typical human ear can hear frequencies ranging from approximately 20 hertz to 20,000 hertz. Typically, the human ear is most sensitive to sounds in the middle frequencies where speech is found and is less sensitive to sounds in the low and high frequencies.

Since the human ear cannot perceive all pitches or frequencies equally, measured noise levels in dB will not reflect the actual human perception of the loudness of the noise. Thus, the sound measures can be adjusted or weighted to correspond to a scale appropriate for human hearing. A-weighting is used most often for high frequency sounds such as vehicle traffic (“hum” sounds). C-weighting is used for low-frequency events such as large arms and explosions (“boom” sounds). Sound levels and their associated dBA levels are listed in **Table 4-4** below.

Table 4-4: Common Sound Levels Relative Loudness of Common Noise Sources

Common Noise Source	Noise Levels, dB(A)	Loudness Relative to a Conversation at a Distance of 1 meter
Threshold of Pain	140	256
Jet taking off (60 meters away)	130	128
Operating heavy equipment	120	64
Night club (with music)	110	32
Construction site	100	16
Boiler room	90	8
Freight train (30 meters away)	80	4
Classroom chatter	70	2
Conversation (1 meter away)	100	1
Urban residence	50	1/2
Soft whisper (1.5 meters away)	40	1/4
North Rim of Grand Canyon	30	1/8
Silent study room	20	1/16
Threshold of human hearing (1,000 Hertz)	0	1/64

Source: U.S. Department of Labor, Occupational Safety and Health Administration 2016

dB(A) = A-weighted decibel

Noise levels decrease (attenuate) with distance from the source. A generally accepted rule is that the sound level from a stationary source would drop approximately 6 dB each time the distance from the sound source is doubled. The sound level from a moving "line" source (e.g., a train or a roadway) would drop 3 dB each time the distance from the source is doubled. Noise levels may be further reduced by natural factors, such as temperature and climate, and are reduced by barriers, both manmade (e.g., sound walls) and natural (e.g., forested areas, hills) (FTA, 2006).

Physical mitigation of noise is generally feasible for higher frequency sounds, such as small arms fire and traffic, whereby the low frequency component of impulsive "boom" noise has wave characteristics that can typically travel through obstacles.

4.5.1 Regulatory Overview

The Noise Control Act of 1972 (P.L. 92-574) directs Federal agencies to comply with applicable Federal, state, interstate, and local noise control regulations to the fullest extent consistent with agency missions. The act requires compliance with state or local noise control regulations in off-post areas only; however, the Army often uses the time restrictions outlined in local ordinances as general guidelines for on-post activities. In 1974, the USEPA provided information suggesting that continuous and long-term noise levels in excess of 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals.

The Maryland Environmental Noise Act of 1974 established policy that states the "limitation of noise to that level which will protect the health, general welfare, and property of the people of the State." Effective October 1, 2012, MDE delegated noise enforcement authority to local governments. MDE continues to update noise control standards, but enforcement is handled by local jurisdictions.

Title 26 of the COMAR, MDE, Subtitle 02, Chapter 03 (26.02.03 Control of Noise Pollution) and City of Frederick Noise Ordinance (Sec. 15-21) provides the regulatory structure for noise pollution, hazards, and control. The COMAR and City of Frederick Ordinance set maximum allowable noise levels for industrial, commercial, and residential land uses, as depicted in **Table 4-5**.

Table 4-5: Maximum Allowable Noise Levels (dBA)

Time	Industrial	Commercial	Residential
Day	75	67	65
Night	75	62	55

Source: COMAR 26.02.03.02 Environmental Noise Standards; City of Frederick Noise Ordinance, Section 15-21.2

In addition, COMAR and City of Frederick Ordinance states that noise levels that emanate from construction or demolition site activities cannot exceed 90 dBA during daytime hours. Daytime hours are defined within the regulations as 0700 to 2200. The installation has established that noise levels emanating from construction or demolition activities may not exceed 90 dBA at the designated construction (limit of disturbance) property line between the hours of 0700 through 1630. Maximum noise levels cannot exceed regulatory industrial, commercial and residential noise level criteria between the hours of 1630 and 0700 (non-construction hours) as specified in **Table 4-4**. Construction activities may not permit prominent discrete tones and periodic noises (dump truck tail gates banging, etc.) that exceed a level which is 5 dBA lower than the noise criteria established in this requirement. Blasting operations associated with construction and demolition activities are exempt from COMAR and City of Frederick Ordinance regulatory noise requirements (daytime hours only). OSHA occupational noise exposure limits for construction workers must be met as detailed in 29 CFR 1926.52. Any construction activities conducted outside

the hours specified in this requirement must be pre-approved through the installation command. Weekend construction activities must be pre-approved through the installation command.

4.5.2 Existing Noise Conditions at Fort Detrick

Fort Detrick is generally relatively quiet with no significant noise pollution sources within the study area boundaries (Area A and Area B). Minor noise sources within Area A include generators located in Buildings 1673 and 1677, usual vehicular traffic, and military unit physical training activities conducted between 0630 and 0800 hours. Minor noise sources within Area B include the dump trucks moving in and out of the existing active land fill. The bugle and cannon are exercised Monday through Friday at 1700 hours. In addition, there is a restriction for "no cadence calling" on portions of physical activity routes that adjoin residential areas external to the post. According to sound-level measurements performed at Fort Detrick, the noise generally generated from operations is compatible with residential use (U.S. Army Garrison, 2006).

Fort Detrick has a mass warning system (giant voice) which is an emergency alert intercom system designed to alert the population throughout the Fort Detrick community. The system is designed to alert people who are outside of buildings because it cannot be heard indoors. Fort Detrick conducts periodic testing of the system to ensure proper operations in the event of an emergency.

4.6 Visual Aesthetics

Visual resources are the natural and human-made features on the installation landscape. They can include cultural and historic landmarks, landforms of particular beauty or significance, water surfaces, or vegetation. Together, these features, called the "viewshed," form the overall impression that a viewer receives of the area or its landscape.

Fort Detrick has developed a set of goals and objectives to address visual requirements to inform the Fort Detrick Installation Design Guide (IDG) process. The goals and objectives provide a pre-determined image to help create a visually pleasing and optimally functional environment (USAG, 2010). The IDG goals are as follows:

> GOAL 1: Plan and develop facilities that maximize operational support for bio-defense, medical research, and global communications.
>
> GOAL 2: Direct the orderly and effective long-range development that supports Army realignment and growth.
>
> GOAL 3: Support the needs of individual soldiers and families by designing and providing facilities that achieve community for the All-Volunteer Force.
>
> GOAL 4: Promote a harmonious relationship between the installation and the local community.
>
> GOAL 5: Respect the environment.

GOAL6: Reinforce the process integrating the Real Property Master Planning components with other installation wide planning processes (USAG, 2010).

As previously described, Fort Detrick is located in Frederick County. Fort Detrick Area A is surrounded by the built environment consisting generally of residential and mixed-use land uses. Interior to Fort Detrick Area A is generally built environment consisting of existing buildings including laboratories, offices, on-post residential areas, barracks, a utility right-of-way, and industrialized areas. From the exterior of the installation, the Area A interior installation built environment is generally visible, causing obstructed views from all directions. The perimeter of Area A is surrounded by chain-link security fencing topped with barbed wire.

Fort Detrick Area B is surrounded by residential land uses with the highest density of residential properties located to the south and northwest of Area B. Fort Detrick Area B is generally unbuilt with the exception of the eastern quadrant, which includes existing buildings and interior areas that are comprised of solar arrays. From the exterior of Area B, the interior Area B areas are somewhat obstructed by perimeter vegetative screening, however certain areas offer unobstructed views of the interior of Area B, which are generally flat, open grassy areas. The perimeter of Area B is surrounded by chain-link security fencing topped with barbed wire.

4.7 Geology, Soils and Topography

4.7.1 Geology

Fort Detrick lies in the Western Lowlands Section of the Piedmont Plateau Physiographic Province (the Appalachian Highlands) in a geologic subdivision known as the Frederick Valley. The Piedmont Plateau extends from the Fall Line between the Coastal Plain and Piedmont Plateau Physiographic Province in the east to the Catoctin Mountains of the Blue Ridge Physiographic Province in the west. The Frederick Valley extends 26 miles by six miles wide, runs from north to south, and is known as the Fredrick Syncline. The Catoctin Mountains, located directly west of the Frederick Valley, are part of an overturned anticline known as the South Mountain Anticlinorium (USACE, 2000). The entire state of Maryland is classified as a seismic zone 1 area with a low probability of experiencing a damaging earthquake within a 50-year period (USAG, 2003).

The Area A Study Area geology is primarily made up of the fractured limestone and dolomite of the Upper Cambrian Frederick Formation, consisting of the Lime Kiln, Rocky Springs Station, and Adamstown members. The concept of formally defined layers or strata is central to the geologic discipline of stratigraphy. Groups of strata are divided into formations, which are divided into members. The Area A Study Area consists mainly of the Rocky Springs Station Member, which is a thinly-bedded limestone comprised of dolomite and layers of coarse quartz sand. In the western portion of the Area A Study Area, there are three small portions comprised of thicker and more massive breccia beds (USACE, 1993).

The Area B Study Area geology is also primarily made up of the fractured limestone and dolomite of the Upper Cambrian Frederick Formation, as well as the Triassic shales, mudstones, and limestone conglomerates. The Area B Study Area is mainly underlain by the New Oxford Formation, comprised of limestone and quartz-pebble conglomerates. The southern portion of the Area B Study Area is underlain by the Rock Springs Station Member. The Triassic shales and mudstones are made up of residual clay with low permeability that are moderately hard and jointed. The Triassic conglomerate is a combined base of coarse silt, sand, and clay (USACE, 1993).

Several sinkholes/depressions have been detected on or near the Area A and Area B Study Areas through interpretation of aerial photographs and U.S. Geological Survey (USGS) quadrangle maps. Six areas of sinkholes have been identified within the Area A Study Area, including NCI-Frederick, Veterans Gate along Ditto Avenue, northeast boundary adjacent to Nallin Farm Pond, west central portion near military housing, and partially within the northwest and southeast boundaries. Five areas of sinkholes have been identified within the Area B Study Area, including the north central boundary, partially within the eastern boundary, the southeastern boundary, the west central portion, and the east central portion. All of the sinkholes in the Area A and Area B Study Areas are filled with soil, with the exception of the one of the small sinkholes in the western portion of the Area B Study Area, which captures a small spring that flows during high groundwater conditions (USACE, 2001).

4.7.2 Soils

The soils of Frederick County are among the most productive in Maryland and consist of a combination of residual lime soils and wind-transported soils (Telemarc, Inc., 1993). The soils within the Area A Study Area are predominately made up of the Adamstown, Duffield, Funkstown, Hagerstown, and Ryder series, which are found throughout the Area A Study Area. The Lindside and Springwood series are also present within the Area A Study Area in smaller patches along the eastern and western boundaries of the Area A Study Area, respectively. In addition, a significant portion of the Area A Study Area is comprised of urban lands (USDA, 2014).

The soils mapped within the Area A Study Area are Adamstown silt loam (0 to 3% slopes), Adamstown-Funkstown complex (0 to 8% slopes), Duffield-Ryder silt loams (0 to 8% slopes), Duffield-Hagerstown-Urban land complex (3 to 8% slopes), Hagerstown loam (0 to 15% slopes), Lindside silt loam (0 to 3% slopes), Springwood gravelly loam (3 to 8% slopes), Urban land (0 to 15% slopes), and Water. Soils are moderately well drained to well drained, have moderate permeability, and no soils are listed as hydric soils (USDA, 2014).

The soils within the Area B Study Area are predominately made up of the Dryrun, Lindside, Morven, Penn, and Springwood series, which are found throughout the Area B Study Area. In addition, there are numerous other series found within the Area B Study Area. The Adamstown, Duffield, Funkstown, Hagerstown, Opequon, and Ryder series are found in small patches within the southeastern and eastern portions of the Area B Study Area. The Foxville, Glenelg, Glenville,

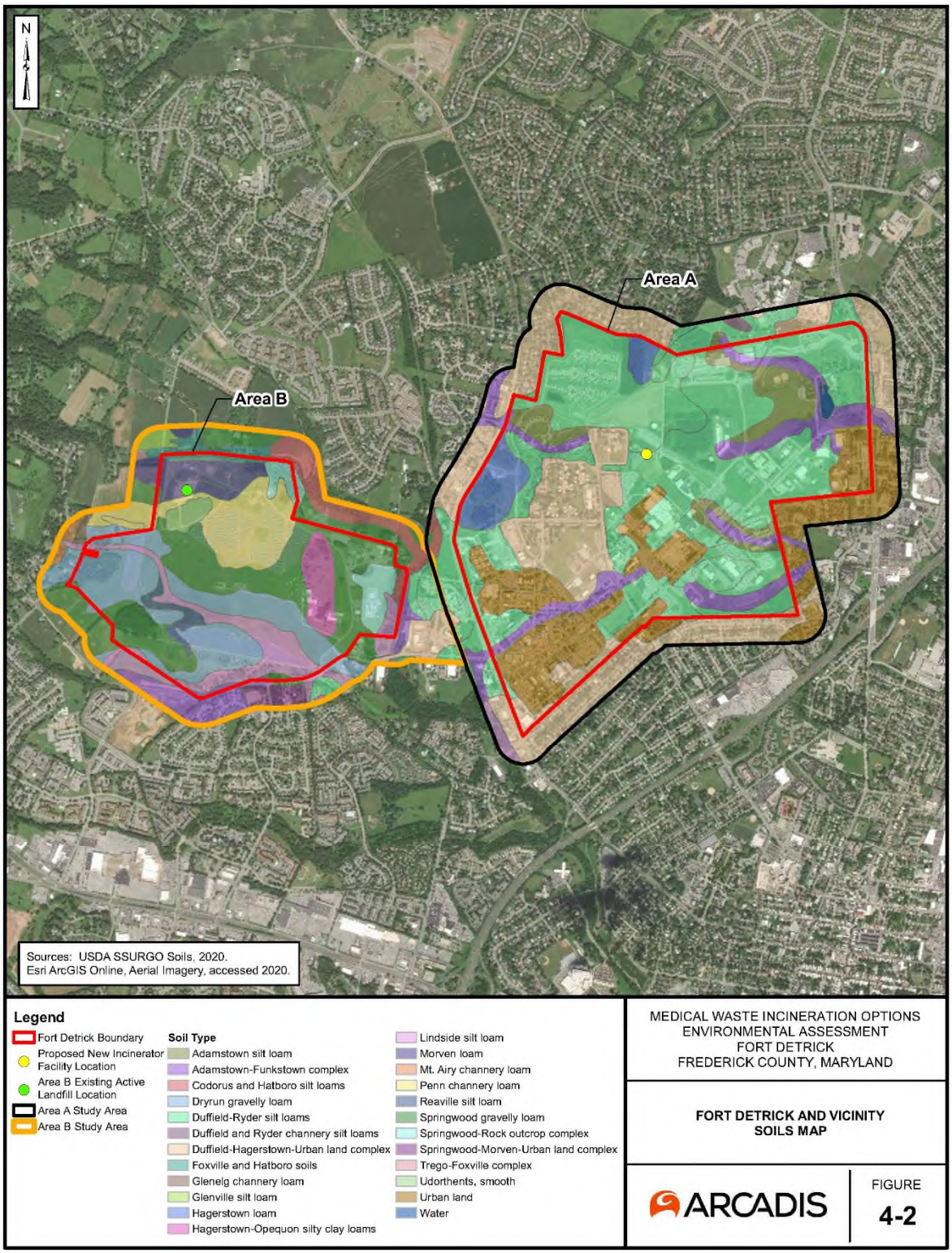
Hatboro, Mt. Airy, and Trego series are found in small patches within the northern and northwestern portions of the Area B Study Area. The Codorus and Reaville series are found in the northeast and central portions of the Area B Study Area, respectively. Lastly, a small patch of Udorthents series is found within the northern center of the Area B Study Area (USDA, 2014).

The soils mapped within the Area B Study Area are Adamstown-Funkstown complex (0 to 8% slopes), Codorus and Hatboro silt loams (0 to 3% slopes), Dryrun gravelly loam (0 to 3% slopes), Duffield-Hagerstown-Urban land complex (3 to 8% slopes), Duffield-Ryder silt loams (3 to 8% slopes), Foxville and Hatboro soils (0 to 3% slopes), Glenelg channery loam (3 to 8% slopes), Glenville silt loam (3 to 8% slopes), Hagerstown-Opequon silty clay loams (3 to 8% slopes, rocky), Lindside silt loam (0 to 3% slopes), Morven loam (0 to 8% slopes), Mt. Airy channery loam (3 to 25% slopes), Penn channery loam (3 to 15% slopes), Reaville silt loam (0 to 3% slopes), Springwood gravelly loam (0 to 15% slopes), Springwood-Morven-Urban land complex (3 to 8% slopes), Springwood-Rock outcrop complex (3 to 8% slopes), Tregor-Foxville complex (0 to 8% slopes), Udorthents, smooth (0 to 8% slopes), and Water. Soils are predominately moderately well drained to well drained within the Area B Study Area, with the exception of Codorus, Foxville, Glenville, Hatboro, and Raeville series soils. Soils have varied permeability, from very low to very high. Harboro series soils are the only series listed as hydric soils (USDA, 2014).

Detailed descriptions of soil series can be found online in the USDA Natural Resources Conservation Service's (NRCS) Soil Survey Geographic Database for Frederick County.

See **Figure 4-2** for mapped soils locations in both study areas.

Figure 4-2: Fort Detrick and Vicinity Soils Map



4.7.3 Prime and Unique Farmland

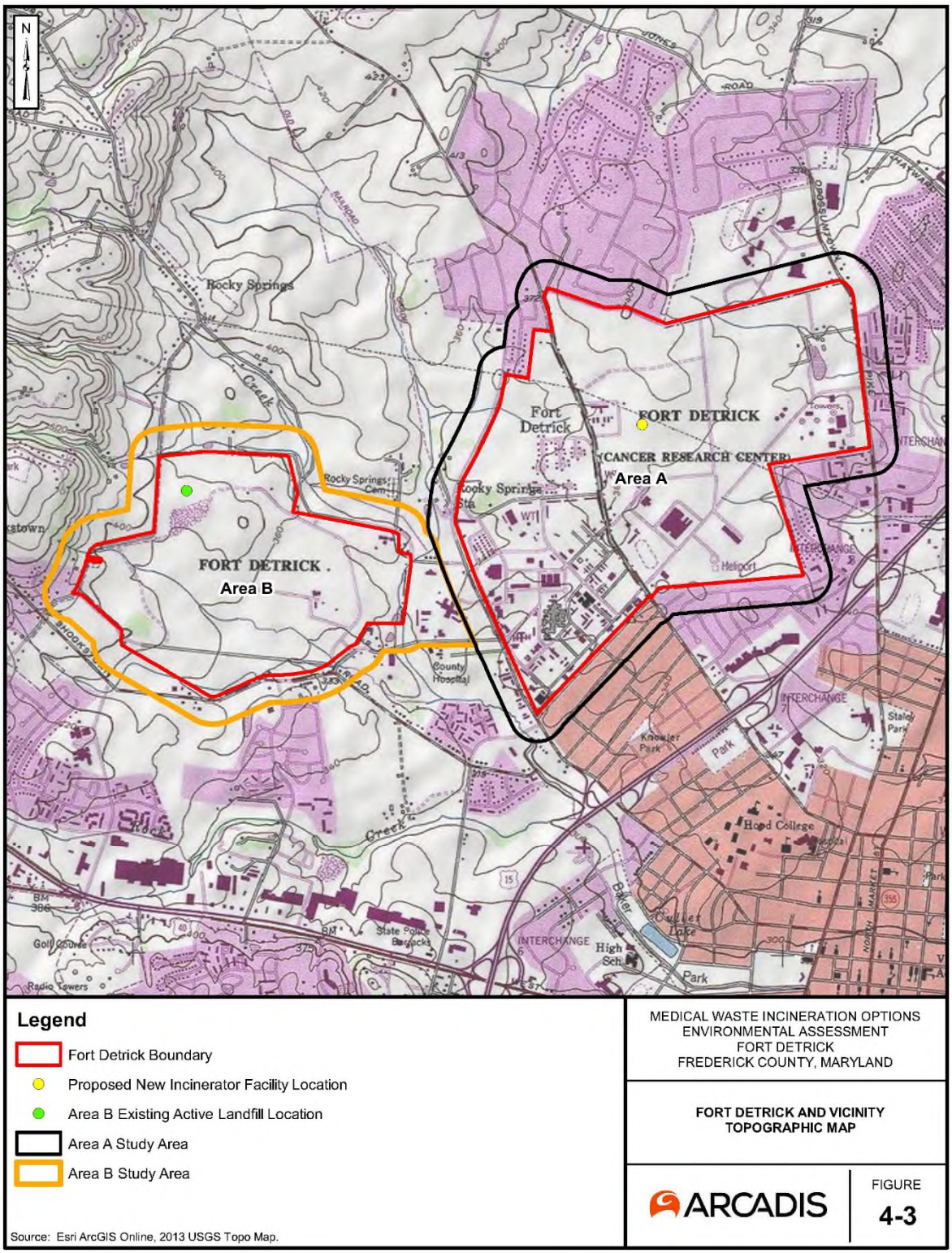
High quality farmland is of major importance in meeting the nation's short- and long-range needs for food and fiber. Prime farmland, as defined by the USDA, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. Farmland of Statewide Importance, as defined by the USDA, is land that includes areas of soils that nearly meet the requirements for prime farmland and that economically produce high yields of crops when treated and managed according to acceptable farming methods. The NRCS identifies soil map units that may be considered prime farmland or Farmland of Statewide Importance due to the physical and chemical properties of the soil. Approximately 28,300,000 square feet (650 acres) of soil map units that may be considered prime farmland and approximately 262,700 square feet (6 acres) of soil map units that may be considered Farmland of Statewide Importance are identified within the Area A Study Area. Approximately 17,905,300 square feet (411 acres) of soil map units that may be considered prime farmland and 5,701,650 square feet (131 acres) of soil map units that may be considered Farmland of Statewide Importance are identified within the Area B Study Area.

Although NRCS identifies soil map units within both study areas that may be considered prime farmland or Farmland of Statewide Importance due to the physical and chemical properties of the soil, as these soils are located within the bounds of an active military installation, they are therefore excluded under the exceptions in the USDA definition. The land in question was converted to military use before enactment of the Farmland Protection Policy Act and therefore is not included in the inventory of prime farmland. Therefore, no prime farmland or Farmland of Statewide Importance is found within the study areas (USDA, 2000).

4.7.4 Topography

The Piedmont Plateau is characterized by rolling terrain and deeply incised stream valleys and encompasses approximately 29 percent of Maryland's land area. The Piedmont Plateau elevations ranges from approximately 100 feet to 1,000 feet above sea level (MDNR, 1999). Fort Detrick elevations range from 320 feet to more than 400 feet above sea level (USGS, 1993). Elevations in the Area A Study Area range from 320 to 380 feet and in the Area B Study Area range from 320 to 500 feet.

Figure 4-3: Fort Detrick Vicinity Topographic Map



4.8 Water Resources and Water Quality

4.8.1 Surface Water

Fort Detrick is located within the Monocacy River drainage basin, a sub-basin of the Middle Potomac River Basin in the Chesapeake Bay watershed. The Monocacy River ranges from 40 feet to 375 feet in width and from 0.5 feet to 18 feet in depth. The Monocacy River originates near the Maryland-Pennsylvania border and flows south and to the east of Fort Detrick and Frederick City, continuing 15 miles downstream to the Potomac River. The Monocacy River is located approximately 1.5 miles to the east of the Area A Study Area.

The Monocacy River is classified by the State of Maryland as Use IVP Recreational Trout Waters and Public Water Supply (COMAR 26.08.02). The Monocacy River is used as a partial water supply system for the City of Frederick and is the sole source water supply system for Fort Detrick under MDE Water Resource Allocation Permit No. FR43S001(02) (USAG, 2011). The Monocacy River is designated as a State scenic river under the Maryland Scenic and Wild Rivers Act of 1968. A scenic river, as designated in Natural Resources Article 8-402(d)(2), is "a free-flowing river whose shorelines and related lands are predominantly forested, agricultural, grassland, marshland, or swampland with a minimum of development for at least 2 miles of the river length". It is State policy to preserve and protect the natural values of designated scenic and/or wild rivers, enhance their water quality, and fulfill vital conservation purposes by wise use of resources within their surrounding environment.

Primary surface waters within the Area A Study Area include the Nallin Farm Pond (3.3 acres), two tributaries of the Monocacy River, Carroll Creek, and one tributary of Carroll Creek. The Nallin Farm Pond, located in the northeast portion of the Area A Study Area, was formed by the diking of natural springs (USAG, 2003). Two Mile Run (Federal Emergency Management Agency (FEMA) Tributary #10) extends south and then east from Nallin Farm Pond for approximately one mile before discharging into the Monocacy River (DA, DIS, 2001). Detrick Branch (FEMA Tributary #9) extends east from the central portion of the Area A Study Area for approximately one mile before discharging into the Monocacy River (DHS and USAG, 2004). Carroll Creek flows south along the southern tip of the Area A Study Area and then flows east for approximately 3.5 miles to the Monocacy River (USAG, 2010a). Edison Branch flows south along the western edge of the Area A Study Area and continues into the Area B Study Area. Additionally, a freshwater pond (0.64 acre) and freshwater emergent wetland (0.43 acre) are mapped by the USFWS National Wetlands Inventory (NWI) Wetlands Mapper (last updated October 8, 2019) along the western edge of the Area A Study near the tributary of Carroll Creek, Edison Branch (USFWS, 2019). The presence and boundaries of these mapped areas would need to be confirmed on site.

Primary surface waters within the Area B Study Area include Carroll Creek and five tributaries of Carroll Creek. Carroll Creek flows into and along the northeastern boundary of the Area B Study Area, then south through the eastern portion of the Area B Study Area, then flows southeast into and through the Area A Study Area, and then flows east for approximately 3.5 miles to the Monocacy River (USAG, 2010a). As discussed above, Edison Branch flows south from the Area A Study Area into the Area B Study Area and then converges with Carroll Creek. Silver Spring Branch (FEMA Tributary #95) flows south into the Area B Study Area through the northern boundary and then east before converging with Carroll Creek. FEMA Tributary #95A flows east into the northwest boundary of the Area B Study Area and then meets up with Silver Spring Branch. Shookstown Creek (FEMA Tributary #96) flows east within the southern portion of the Area B Study Area before converging with Carroll Creek east of the Area B Study Area. FEMA Tributary #96A flows southeast through the central portion of the Area B Study Area and meets up with Shookstown Creek in the southeast corner of the Area B Study Area. Additionally, there are five freshwater ponds and a freshwater forested/shrub wetland mapped by the USFWS NWI Wetlands Mapper in the Area B Study Area. Two freshwater ponds, approximately 0.49 acre and 0.74 acre, are mapped along the northern boundary of the Area B Study Area, near Carroll Creek. One freshwater pond, approximately 1.27 acres, is mapped on the southern boundary of the Area B Study Area. One freshwater pond, approximately 0.36 acre, is mapped within the eastern portion of the Area B Study Area. Another freshwater pond, approximately 0.48 acre, and the freshwater forested/shrub wetland area (approximately 6.06 acres) are mapped near Carrol Creek within the eastern portion of the Area B Study Area (NWI Wetland Data, 2018). The presence and boundaries of these mapped areas would need to be confirmed on site.

Stormwater from the central and western portions of the Area A Study Area drains west into Carroll Creek and stormwater from the eastern portion of Area A Study Area drains into Tributaries #9 and #10, and eventually the Monocacy River (DHS and USAG, 2004). There are 27 stormwater ponds within Area A Study Area and only 9 of these hold stormwater year-round, with the remaining ponds holding water only during rain events. Eight separate surface water outfalls that drain from Area A Study Area. Four of these outfalls (A-1, A-2, A-7, and A-8) drain toward Carroll Creek and the other four outfalls (A-3, A-4, A-5, and A-6) drain toward the Monocacy River (General Physics, 2004; USAG, 2005). The majority of stormwater in Area A Study Area is diverted through a system of surface ditches, culverts, inlets, and storm sewer lines.

Stormwater from the Area B Study Area drains into Carroll Creek via two outfall culverts (B-1 and B-2). There are two separate stormwater management basins in the Area B Study Area, including an erosion and sediment control basin associated with the existing active landfill and a stormwater management basin associated with the Reserve Center on the northeastern portion of Area B (USAG, 2010a).

4.8.2 Groundwater

Groundwater in the area of Fort Detrick occurs in hard rock aquifers associated with the Frederick Valley subdivision of the Piedmont Physiographic Province. These are some of Maryland's most productive aquifers, with approximately 20 percent of the formations yielding water at rates of at least 50 gallons per minute (USAG, 2011). Groundwater in and around Fort Detrick is generally of good quality and is drawn from fractures or solution channels located within carbonate rocks (e.g. limestone and dolomite). Water is transported through the carbonate aquifers via bedding planes, fractures, joints, faults, and other partings towards the Monocacy River (USAG, 2003). Groundwater underlying the Fort Detrick area flows generally to the southeast, towards the Monocacy River (USACE, 2000). For the purpose of research, under MDE Permit No. FR1943G101(05), Fort Detrick is permitted to withdraw a daily average of 9,000 gallons of well water on a yearly basis and a daily average of 9,500 gallons for the month of maximum use (USAG, 2003).

In 1987, TCE was detected (300 parts per billion [ppb] to over 2000 ppb) in a production well of Building 568 in Area A. Field RIs were conducted from October 1994 through May 1995 (referred to as "Phase I") and from January through September 1997 (referred to as "Phase II"). According to the Revised Final Remedial Investigation Area A report, issued in June 2000, which summarized the Phase I and Phase II efforts, a groundwater plume was identified in Area A and is currently controlled by an active groundwater treatment system at Building 568(USACE, 2000). The Army's CERCLA-based IRP for Area A is at "Remedy in Place" or "Response Complete" (USAG, 2010b).

Area B Groundwater was identified as an area of potential environmental concern through the Fort Detrick IRP (USAG, 2010b). TCE concentrations above the MCLs and elevated levels of trichlorofluoromethane were detected in February 1992 in an Area B monitoring well. A study of the active landfill and Area B was conducted that included installation and sampling of monitoring wells. In April 2009, Area B groundwater was placed on the National Priorities List and a RI was implemented from 2011 through 2017 (USACE, 2019).

The Final Area B Groundwater RI Report (December 2019) noted that the disposal pits in the western disposal area are the primary source of TCE, perchloroethylene (PCE), chloroform, and other constituents found in Area B groundwater. The western disposal area was subsequently covered with an impervious, composite cap to limit recharge through impacted areas; capping was completed in May 2010. Groundwater passing beneath the western disposal area picks up contaminants and transports them downgradient. All groundwater transport pathways converge upward to surface water, discharging either within Area B or in the primary discharge area, a 0.5-mile region of springs and seeps on Carroll Creek and a stream east of Area B (USACE, 2019).

There are 33 groundwater COCs, where TCE is the primary groundwater contaminant at Area B. Additional COCs include twenty-one VOCs, four SVOCs, metals (lead, cobalt, and arsenic),

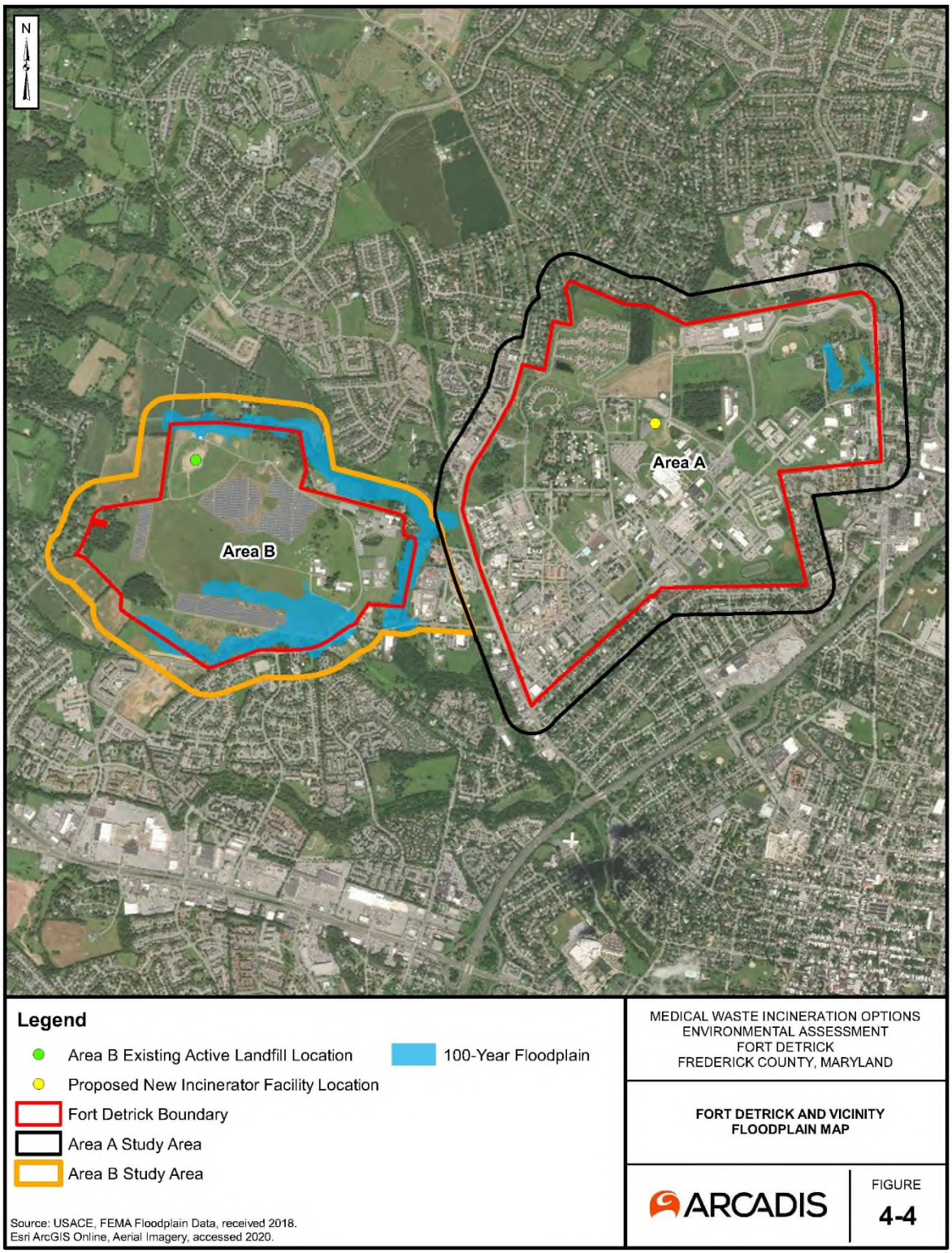
pesticides (heptachlor), and dioxins (2,3,7,8-tetrachlorodibenzo-p-diozin) (December 2019). Most of the COCs were found at levels of concern in groundwater only near the western disposal area. The COCs present at the highest concentrations (TCE, PCE, and chloroform) were found in groundwater downgradient of the western disposal area towards the primary discharge area.

The western area of Area B was deemed to have the most significant human health risk. USEPA's risk management thresholds were exceeded in this area for hypothetical future use of groundwater by residents as a source of drinking water, future potential exposures to a construction worker, and future indoor air exposures to hypothetical commercial workers or residents (USACE, 2019).

4.8.3 Floodplains

According to the FEMA, floodplains are defined as those areas that will be inundated by a flood event having a 1% chance of exceedance in any given year. This is also referred as the 100-year floodplain (Zone AE). Based on FEMA's Flood Insurance Rate Maps, a small portion of the Area A Study Area, located east of the proposed new incinerator facility location along the perimeter of Area A, is within the 100-year floodplain. Several areas within the northern, eastern, and southern portions of the Area B Study Area, including a portion of the road that would be used to travel from the proposed new incinerator facility to the existing active landfill, are located within the 100-year floodplain. The proposed new incinerator facility and the existing active landfill locations are not within the 100-year floodplain. **Figure 4-4** shows the locations of the 100-year floodplain in the Area A and Area B Study Areas.

Figure 4-4: Fort Detrick Vicinity Floodplain Map



4.8.4 Wetlands

Wetlands are jointly defined by the USEPA and the USACE as "those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include "swamp marshes, bogs and similar areas" (40 CFR 230.3(t) and 33 CFR 328.3(b)). USACE regulates the discharge of dredged or fill material in waters of the United States, including jurisdictional wetlands pursuant to Section 404 of the CWA. Section 404 of the CWA requires Federal regulation for most activities that impact wetlands.

EO 11990, *Protection of Wetlands*, requires Federal agencies take action to minimize the destruction, loss or degradation of wetlands. The order further requires Federal agencies to ensure that there are no practicable alternatives to such construction and that the Proposed Action includes all practical measures to minimize harm to wetlands which may result from such use. In making this determination agencies may take into account economic, environmental and other pertinent factors (USACE, 2014).

Important wetland functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, storm water attenuation and storage, sediment detention, and erosion protection. Wetlands on Fort Detrick are beneficial to stormwater management, erosion, and sediment control. Wetlands provide habitat for ducks, geese, herons, shore birds, muskrat, mink, and beaver, and also support numerous species of annual and perennial herbaceous plants.

There are three wetlands mapped by the USFWS NWI Wetlands Mapper within the Area A Study Area. One freshwater pond, Nallin Farm Pond (3.3 acres), mapped in the northeast portion of the Area A Study Area and characterized as palustrine, unconsolidated bottom, permanently flooded, and diked/impounded. The other freshwater pond (0.64 acre) and a freshwater emergent wetland (0.43 acre) are mapped along the western edge of the Area A Study Area and characterized as palustrine, unconsolidated bottom, permanently flooded, and manmade via excavation, and palustrine, emergent, dominated by common reed (*Phragmites australis*), and temporarily flooded, respectively (USFWS, 2019). The presence and boundaries of these mapped areas would need to be confirmed on site.

There are six wetlands mapped by the USFWS NWI Wetlands Mapper within the Area B Study Area. Two freshwater ponds (0.49 acre and 0.74 acre) are mapped along the northern boundary of the Area B Study Area and characterized as palustrine, unconsolidated bottom, permanently flooded, and diked/impounded. Three freshwater ponds are characterized as palustrine, unconsolidated bottom, permanently flooded, and manmade via excavation, and mapped on the southern boundary of the Area B Study Area (1.27 acres) and within the eastern portion of the Area B Study Area (0.36 and 0.48 acre). A freshwater forested/shrub wetland (6.06 acres) is mapped within the eastern portion of the Area B Study Area and characterized as palustrine,

forested, broad-leaved deciduous, and temporarily flooded (USFWS, 2019). The presence and boundaries of these mapped areas would need to be confirmed on site.

The proposed new incinerator facility and the existing active landfill locations are not located within mapped wetland areas. These mapped wetland areas are shown on **Figure 4-5** below.

The Natural Resources Management Planning Level Survey (PLS) was completed in July and August 2010 and included identification and delineation of wetland sites within Area A and Area B (USAG, 2011). Five wetland sites (total of 3.58 acres) within the northeast corner of Area A, in the vicinity of Nallin Farm Pond were delineated during the 2010 PLS. Three wetland sites and one drainage ditch (total of 4.88 acres) were delineated within the southeastern portion of Area B. It is assumed that the locations and boundaries of these delineated areas are still valid but should be confirmed on site as needed. The proposed new incinerator facility and the existing active landfill locations are not located within or near these delineated areas. These delineated areas are shown on **Figure 4-5** below.

Wetland Sites 1 through 5 were identified and delineated in the 2010 PLS in Area A. Wetland Site 1 and Wetland Site 2 are isolated from other wetland areas, Nallin Farm Pond, and the tributary (Two Mile Run), which flows from Nallin Farm Pond into the Monocacy River. Wetland Site 1 (approximately 0.13 acre) is located southwest of Nallin Farm Pond and is characterized as a wet meadow with dominant species of creeping bentgrass (*Agrostis stolonifera*), field bindweed (*Convolvulus arvensis*), Canada thistle (*Cirsium arvense*), and strawcolored flatsedge (*Cyperus stigosus*) (USAG, 2011). Wetland Site 2 (approximately 0.27 acre) is located southwest of Nallin Farm Pond and is characterized as a palustrine-forested wetland with pockets of scrub-shrub and emergenct vegetation. Dominant species of Wetland Site 2 include red maple (*Acer rubrum*), river birch (*Betula nigra*), silky dogwood (*Cornis amomum*), rice cutgrass (*Leersia oryzoides*), common reed (*P. australis*), clearweed (*Pilea pumila*), and black willow (*Salix nigra*) (USACE 2011).

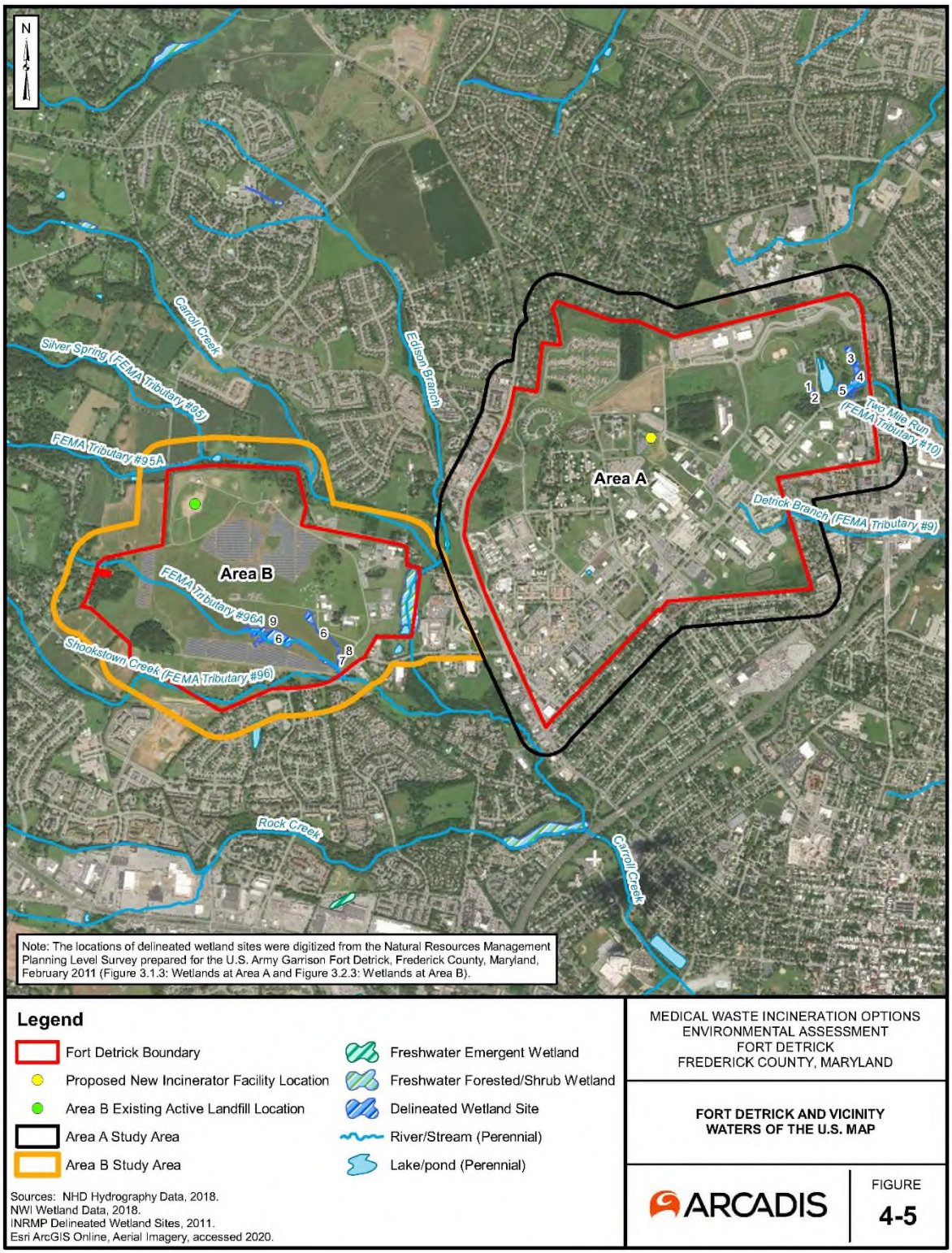
Wetland Site 3, Wetland Site 4, and Wetland Site 5 drain into the tributary and are therefore, regulated by the USACE. Wetland Site 3 (approximately 0.74 acre) is located east of Building 1655 and is characterized as a palustrine emergent wetland with dominant species of creeping bentgrass, Frank's sedge (*Carex frankii*), fox sedge (*C. vulpinoidea*), soft rush (*Juncus effuses*), and green bulrush (*Scirpus atrovirens*). Wetland Site 4 (approximately 1.52 acres) is located below the Nallin Farm Pond outfall and is characterized as a palustrine-forested wetland. Dominant species of Wetland Site 4 include creeping bentgrass, Queen Anne's lace (*Daucus carota*), and tall fescue (*Festuca arundinacea*) (USAG, 2011). Wetland Site 5 (approximately 0.92 acres) is located south of an asphalt-paved pathway (USACE, 2005a) and is characterized as a wetland enhancement area planted with emergent shrub and tree wetland species. Dominant species of Wetland Site 5 include marshmallow (*Althaea officinalis*), river birch, buttonbush (*Cephalanthus occidentalis*), spotted touch-me-not (*Impatiens capensis*), black willow, and broad-leaf cattail

(*Typha latifolia*) (USAG, 2011). Wetland Site 4 and Wetland Site 5 are located within the floodplain of the tributary (USACE, 2005b).

Wetland Site 1 and Wetland Site 3 are considered to provide very low-quality wildlife habitat function, while Wetland Site 2, Wetland Site 4, and Wetland Site 5 are thought to provide high quality wildlife habitat function and improved water quality (USAMRMC and USAG, 2006).

Wetland Sites 6 through 9 were identified and delineated in the 2010 PLS in Area B. Wetland 6 is the largest wetland on Area B (4.63 acres) and was delineated as two linear segments that connect near the boundary of Area B. Wetland 6 is considered an emergent wetland and is dominated by creeping bentgrass, barnyardgrass (*Echinochloa crus-galli*), soft rush, and Pennsylvania smartweed (*Polygonum pensylvanicum*). Wetland 7 (0.05 acres) is also an emergent wetland and is located near the entrance of Area B. This wetland is dominated by soft rush, path rush (*Juncus tenuis*), Pennsylvania smartweed, and rough cocklebur (*Xanthium strumarium*). Wetland 8 (0.02 acre) was delineated as a disturbed, drainage ditch and lacked hydrophytic vegetation. Wetland 9 (0.18 acre) is located just north of Wetland 6 and is an emergent wetland. This wetland is dominated by bog beggarticks (*Bidens conjuncta*), barnyardgrass, blunt spikerush (*Eleocharis obtuse*), and slender goldentop (*Euthamia caroliniana*) (USAG, 2011).

Figure 4-5: Fort Detrick Vicinity Waters of the US Map



4.8.5 Water Quality Certification

CWA water quality certifications provide the opportunity to address aquatic resource impacts of federally issued permits and licenses, in order to help protect water quality within the state. Under Section 401, a Federal agency cannot issue a permit or license for an activity that may result in a discharge to Waters of the U.S. until they state where the discharge would originate or the Federal agency has granted or waived Section 401 certification. The state has the ability to grant, with or without conditions; deny; or waive certification. Granting certification, with or without conditions, allows the Federal permit or license to be issued consistent with any conditions of the certification. Denying certification prohibits the Federal permit or license from being issued. Waiver allows the permit or license to be issued without state comment. States make their decisions to deny, certify, or condition permits or licenses based in part on the proposed project's compliance with USEPA-approved water quality standards.

4.9 Biological Resources

Biological resources include native or naturalized plants and animals, as well as federally protected species and the habitats in which they live. Protected biological resources include plants and animal species listed by the State of Maryland as rare, threatened, or endangered, or by the USFWS as threatened or endangered. Special concern species are not afforded the same level of protection as the protected species, but their presence is taken into consideration by resource agency biologists involved in reviewing projects and permit applications (USACE, 2014).

4.9.1 Vegetation

Fort Detrick was originally covered by an oak-hickory hardwood forest, characterized by species such as northern red oak (*Quercus rubra*), black oak (*Q. velutina*), white oak (*Q. alba*), scarlet oak (*Q. coccinea*), chestnut oak (*Q. montana*), and several species of hickories (*Carya* spp). Species such as sassafras (*Sassafras albidum*), sourwood (*Oxydendrum arboreum*), wild grape (*Vitis* spp), Virginia creeper (*Parthenocissus quinquefolia*), and poison ivy (*Toxicodendron radicans*) comprise the understory of oak-hickory forests. As a result of urbanization at Fort Detrick, most of the native vegetation has been destroyed or highly altered. Approximately 500 acres are maintained as forested areas and grasses.

The PLS, completed in July and August 2010, delineated the installation into multiple habitats and vegetation and wildlife species were identified in each habitat. There are seven plant communities generally present within the Area A Study Area, including: forested upland, mowed, maintained lawns, old field, vegetative basin, emergent wetland, forested wetland, and open water. Forested upland areas are located in the central, northern, and eastern portions of the Area A Study Area and are characterized by tree species such as box elder (*Acer negundo*), black locust (*Robinia pseudoacacia*), and slippery elm (*Ulmus rubra*), and ground layer species, such as garlic mustard

(*Alliaria petiolate*), nodding thistle (*Carduus mutans*), Queen Anne's lace, bush honeysuckle (*Lonicera japonica*), mile-a-minute (*P. perfoliatum*), lady's thumb (*P. persicaria*), multiflora rose (*Rosa multiflora*), and poison ivy. Maintained mowed areas are located throughout the Area A Study Area and are characterized by cover types such as chicory (*Chicorium intybus*), thistle species (*Cirsium* spp.), crabgrass (*Digitaria sanguinalis*), grass species (*Festuca* spp.), field peppergrass (*Lepidium campestre*), common plantain (*Plantago major*), common dandelion (*Taraxacum officinale*), and clover species (*Trifolium* spp.). Old field habitat is located in the northern and northeastern portions of Area A and comprised primarily of grasses, including horseweed (*Erigeron Canadensis*), sheep fescue (*Festuca ovina*), wild timothy (*Muhlenbergia glomerate*), redtop panicgrass (*Panicum agrostoides*), switchgrass (*P. virgatum*), and common timothy (*Phleum pretense*), as well as scattered tree and shrub species including tree-of-heaven (*Ailanthus altissima*), autumn olive (*Elaegnus umbellate*), red mulberry (*Morus rubra*), and weeping willow (*S. babylonica*) (USAG, 2011).

Three stormwater ponds, that no longer hold water year round, were delineated as vegetative basins and include common ground layer species such as Queen Anne's lace, grass species, pokeweed (*Phytolacca americana*), plantain species, foxtail grass (*Seteria faberi*), horsenettle (*Solanum carolinense*), and red clover (*T. pretense*). There are five wetlands delineated within the Area A Study Area that total approximately 3.58 acres. These areas are discussed under Section 4.8.4 above. Common species to the stormwater ponds include chicory, field bindweed, thistle species, grass species, plantain species, Pennsylvania smartweed, and clover species (USAG, 2011).

There are five plant communities generally present within the Area B Study Area, including: forested upland, mowed, maintained lawns, old field, emergent wetland, and open water. Forested upland areas are located in the western, eastern, and northern portions of the Area B Study Area and are characterized by tree species such as silver maple (*A. saccharinum*) and black cherry (*Prunus serotina*), and ground layer species, such as garlic mustard, common burdock (*Arctium minus*), spicebush (*Lindera benzoin*), pokeweed, Pennsylvania smartweed, multiflora rose, and poison ivy. Maintained mowed areas are located throughout the Area B Study Area and are characterized by cover types such as common yarrow (*Achillea millefolium*), chicory, thistle species, Deptford pink (*Dianthus armeria*), pokeweed, plantain species, curly dock (*Rumex crispus*), clover species, and common mullein (*Verbascum Thapsus*). Old field habitat is the largest cover type in the Area B Study Area and is comprised primarily of herbaceous species, including common ragweed (*Ambrosia artemisiifolia*), chicory, Canada thistle, Deptford pink, white snakeroot (*Eupatorium rugosum*), and common mullein.

There are three wetlands and one drainage ditch delineated within the Area B Study Area that total approximately 4.88 acres. These areas are discussed under Section 4.8.4 above. There are two small ponds located in the southeastern portion of the Area B Study Area. Common species to these ponds include Indian hemp (*Apocynum cannabinum*), small white aster (*Aster vimineus*),

nodding thistle, nut sedge (*Cyperus esculentus*), white snakeroot, common yellow oxalis (*Oxalis stricta*), pokeweed, and goldenrod species (*Solidago* spp.) (USAG, 2011).

4.9.2 Wildlife Resources

Wildlife species observed within the Area A and Area B study areas during the PLS and by Dr. Lynn Hoch on site are representative and typical for communities in this area. Mammal species observed include white-tailed deer (*Odocoileus virginianus*), white-footed mouse (*Peromyscus leucopus*), racoon (*Procyon lotor*), red tail fox (*Vulpes vulpes*), skunk (*Mephitis mephitis*), muskrats (*Ondatra zibethicus*), groundhogs (*Marmota monax*), eastern grey squirrel (*Sciurus carolinensis*), coyote (*Canis latrans*), small brown bat (*Myotis lucifugus*; only observed in Area A), and black bear (*Ursus americanus*; only sighted in Area B). Bird species observed within the study areas include northern cardinal (*Cardinalis cardinalis*), American goldfinch (*Carduelis tristis*), gray catbird (*Dumetella carolinensis*), American robin (*Turdus migratorius*), eastern tufted titmouse (*Baeolophus bicolor*), red-shouldered hawk (*Buteo lineatus*), mourning dove (*Zenaida macroura*), bluebird (*Sialia sialis*), geese (*Branta canadensis)*, pigeon (*Columba livia domestica*), and starlings (*Sturnus vulgaris)*. Insect species observed include field cricket (*Cryllus pennsylvanicus*), cicada (*Magicicada septendecim*), dragonfly species (Odonata: Anisoptera spp), common buckeye (*Junonia coenia*), Monarch butterfly *(Danaus plexippus*), and cabbage white butterfly (*Pieris rapae*). Amphibian and reptile species observed include eastern box turtle (*Terrapene carolina carolina*), snapping turtle (*Chelydra serpentine*), red-eared slider (*Trachemys scripta elegans*), leopard frog (*Lithobates sp*), black snake (*Pantherophis obsoletus*), garter snake (*Thamnophis sp*), and common frog (*Rana temporar*) (USAG, 2011; Hoch, 2020). A full list of vegetation and wildlife species observed during the 2010 survey within the Area A and Area B Study Areas is included in the PLS.

The Monocacy River is a warm water fishery, Use IV-P (COMAR 26.08.02), and water quality must be maintained to support viable populations of warm water aquatic invertebrates and fish. The Monocacy River 1976-1983 report conducted by the MDNR identified at least 43 fish species present in the river. Smallmouth bass (*Micropterus dolomieu*), black crappie (*Pomoxis nigromaculatus*), redbreast sunfish (*Lepomis auritus*), bluegill (*L. macrochirus*), catfish (*Ictalurus punctatus*), eels, shorthead redhorse (*Moxostoma macrolepidotum*), white sucker (*Catostomus commersonii*), and various shiners and minnows are the most common species of fish found within the middle segment of the Monocacy River (near Carroll Creek), with small populations of white crappie (*P. annularis*) and brown trout (*Salmo trutta*) (Advanced Sciences, Inc., 1991).

4.9.3 Rare, Threatened, and Endangered Species

Protected biological resources include plant and animal species listed by the State of Maryland as rare, threatened, or endangered or by the USFWS as threatened or endangered. Special concern

species are not afforded the same level of protection, but their presence is taken into consideration by resource agency biologists involved in reviewing projects and permit applications.

Under the Endangered Species Act (ESA), an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future. The ESA also provides for recovery plans to be developed describing the steps needed to restore a species population. Special status species are listed as threatened or endangered, are proposed for listing, or are candidates for listing by the state and/or federal government.

Critical habitats, as defined by the ESA, are areas with physical or biological features essential to the preservation of a species that may require special management or protection. Federal agencies are required to take precautions to not adversely modify critical habitat. The following considerations are made when determining critical habitat for a species: space for individual and population growth and normal behavior; cover or shelter; food, water, air, light, minerals, or other nutritional or physiological requirements; sites for breeding and rearing offspring; and habitats that are protected from disturbances or are representative of the historic geographical and ecological distributions of a species (USACE, 2014).

The USFWS lists one threatened wildlife species in Frederick County: northern long-eared bat (*Myotis septentrionalis*), which is listed as federally and state threatened, within the Area A and Area B Study Areas. Projects with a federal nexus that have tree clearing equal to or greater than 15 acres require further consideration and consultation with the USFWS under Section 7 of the ESA and evaluation under the Northern Long-Eared Bat Consultation and Section 4(d) Rule Consistency Key. For the purposes of this document, it is assumed that less than 15 acres of trees would be cleared as a result of the Proposed Action and, therefore, northern long-eared bat has not been evaluated under the Section 4(d) Rule for potential impacts from the Proposed Action. A response from the MDNR, received April 2, 2020, indicated that Carroll Creek is known to support the state-listed threatened species pearl dace (*Margariscus margarita*) and the state highly rare species checkered sculpin (*Cottus* sp. 7). Carroll Creek flows through the extreme southern tip of the Area A Study Area and flows along the eastern and northern boundaries of the Area B Study Area. There are no other threatened, endangered, or other special status plant or wildlife species known to exist within the Area A and Area B Study Areas.

4.10 Energy and Utilities

4.10.1 Energy

Until 2008, steam generation at Fort Detrick was produced exclusively by the Boiler Plant (Building 190) and at Building 393 as heat recovered from the two solid waste combustors and two medical waste incinerators. However, since that time, additional steam generation sources

have come online. The NCI-Frederick has constructed two natural gas fired steam generation facilities, which meet their entire steam requirement. A CUP is located on Fort Detrick Area A. The CUP simultaneously produces electrical power, heating, and cooling in a unified facility under the U.S. Army's Enhanced Use Leasing (EUL) program, which allows for military installations to out lease land and facilities to a private or public entity. (USAG, 2005a). The CUP (aka Energy Production Facility (EPF) is a contractor owned/contractor operated plant that provides secure commodities for electricity, steam, and chilled water for the NIBC. Construction underway to provide utility support to Global Communications and Medical Intelligence units (Signal Campus). Ft. Detrick is connecting missions to support Global Communications and Intelligence. In 2018, a micro boiler decentralization project was completed to install natural gas fired micro boilers throughout the campus which eliminated the need for the vastly energy inefficient and polluting centralized Building 190 boiler plant. The Building 190 plant was permanently closed August 25, 2018.

Solar panels are located on the roofs of the privatized homes located on Fort Detrick Area A, and Fort Detrick Area B also includes several solar arrays located in the western, southern, and north-central portions. On Area B, the U.S. Army Office of Energy Initiatives (OEI), Fort Detrick, and the Defense Logistics Agency (DLA) Energy collaborated with Montevue Lane Solar LLC to develop a 15 megawatt (MW) alternating current (AC) solar energy project on Area B (U.S. Army OEI, 2019). In February 2016, the project became fully operational, bringing on-site generation with a potential future microgrid and supply diversity to the installation (U.S. Army OEI, 2019). All energy supplied by the 59,994 solar panels is consumed by Fort Detrick, and the project generates enough electricity to power the equivalent of about 2,720 homes per year and reduces greenhouse gas emissions by approximately 19,000 metric tons annually (Ameresco, 2016). The solar facility is designed to serve about 12 percent of the installations total annual electric load requirements, improving the installation's resilience by adding distributed generation sources and supply diversification (U.S. Army OEI, 2019). The solar project was financed and is owned, operated, and maintained by Ameresco, and includes a 25-year Power Purchase Agreement (PPA) and a 26-year lease with the Army (U.S. Army OEI, 2019). Potomac Edison supplies the majority of electricity to Fort Detrick.

Natural gas is furnished by the Washington Gas and natural gas usage at Fort Detrick is primarily by distributed boilers and heaters, and the CUP and the NIBC Mission Partner facilities (USAG, 2010b).

4.10.2 Stormwater

Stormwater is defined as rainwater that flows overland; accumulates in gutters, ditches, and culverts; and travels through storm drains to streams.

Provisions of COMAR 26.17.02.01 require that all jurisdictions in Maryland implement a stormwater management program to control the quality and quantity of stormwater runoff resulting

from new development (MDE, 2010). The primary goals of the state and local stormwater management programs are to maintain after development, as nearly as possible, the predevelopment runoff characteristics, and to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding by implementing environmental site design to the maximum extent practicable and using appropriate structural best management practices only when necessary.

COMAR Title 26.17.02.05 (when stormwater management is required) exempts any developments that do not disturb more than 5,000 square feet of land area or 100 cubic yards of earth. Conversely, developments disturbing more than 5,000 square feet of land or 100 cubic yards of earth require stormwater management. The Stormwater Management Plan requirements are outlined in COMAR 26.17.02.09.

In general, stormwater from the central and western portions of Area A drains west into Carroll Creek, whereas stormwater from the eastern portions of Area A drains into Tributaries #9 and #10 (USAG, 2011). There is a total of eight separate surface water outfalls in Area A. The majority of stormwater in Area A is diverted through a system of surface ditches, culverts, inlets, and storm sewer lines. There are 27 stormwater management ponds on Area A and only 9 of these hold stormwater year-round, with the remaining ponds holding water only during rain events.

Fort Detrick's Stormwater Institutional Management Plan (SIMP) provides a comprehensive drainage area-wide plan and practices for future development, including a water quality banking system, and innovative site planning and design using low impact development (LID) approaches. As part of the SIMP, any future stormwater retention ponds should be designed to minimize retention time to avoid attracting resident waterfowl (USAG, 2011).

There are two outfalls (B-1 and B-2) in Area B that discharge stormwater to Carroll Creek. Fort Detrick has four separate general permits for stormwater discharge (USAG, 2011).

4.10.3 Other Utilities

There are many easements at Fort Detrick, some directly serving Fort Detrick and others are for private utility providers (USACE, 2019). Easements also extend off Fort Detrick property between Areas A and B, in proximity to Montevue Lane.

Fort Detrick is permitted to withdraw water from local resources in accordance with permits regulated by MDE. Drinking water consumed by Fort Derick customers is a combination of Fort Detrick and Frederick County sources. Source water provided by Fort Detrick comes from the Monocacy River and through the Fort Detrick Water Treatment Plant (WTP) (Public Water System ID MD010-0011) (MDE, 2018). Most Frederick County residents obtain their water from publicly owned Community Water Systems (CWS). A large Federal CWS serves Fort Detrick (Frederick

County, 2014). Fort Detrick has an existing long-term agreement with Frederick County to purchase drinking water for use at the installation, and beginning on September 20, 2012, Fort Detrick began obtaining supplemental drinking water from Frederick County sources (USAG, 2018).

Several existing on-site subsurface utilities are located in close proximity to the proposed HMIWI facility location on Area A, including sanitary sewer, electric, storm sewer, potable water, natural gas, and data fiber.

Subsurface utility coverage is concentrated in the eastern quadrant of Area B to serve the consolidation of existing facilities. The utilities available within Area B include water, wastewater, gas, electric, communication and stormwater lines, and the water and gas lines extend to the center of Area B (USACE, 2019). The portion of Area B occupied by the current active landfill includes wastewater line mains and a water line main located in proximity (USACE, 2019). Provisions for redundant utilities and infrastructure systems in Area B is addressed in the Areas B and C Area Development Plan.

4.11 Cultural Resources

Cultural resources are "historic properties" as defined by the National Historic Preservation Act of 1966 (NHPA), "cultural items" as defined by the Native American Graves Protection and Repatriation Act of 1979 (NAGPRA), "archaeological resources" as defined by the Archaeological Resource Protection Act of 1979 (ARPA), "sacred sites" as defined by EO 13007, to which access is afforded under the American Indian Religious Freedom Act of 1987 (AIRFA), and collections and associated records as defined in 36 CFR 79 (USAG, 2019).

Archeological resources consist of locations where prehistoric or historic activity measurably altered the earth or produced deposits of physical remains. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic significance. Traditional cultural properties include locations of historic occupations and events, historic and contemporary sacred and ceremonial areas, prominent topographical areas that have cultural significance, traditional hunting and gathering areas, and other resources that Native Americans or other groups consider essential for the persistence of their traditional culture (USAG, 2019).

Several federal laws and regulations, including NHPA, ARPA, NAHPRA, and AIRFA, have been established to manage cultural resources. In order for a cultural resource to be considered significant, it must meet one or more of the following criteria for inclusion on the National Register of Historic Places (NRHP):

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and associated and: 1) that are associated with events that have made a significant contribution to the broad

patterns of our history; or 2) that are associated with the lives or persons significant in our past: or 3) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or 4) that have yielded, or may be likely to yield, information important to prehistory or history (USAG, 2019).

Cultural resources are finite, non-renewable, and often fragile, and are frequently threatened by development activities. In accordance with AR 200-1, *Cultural Resources Management*, Fort Detrick maintains an Integrated Cultural Resources Management Plan (ICRMP) that serves as a guide for compliance with the NHPA, and other applicable Federal laws and regulations (USAG, 2019). This document identifies several historic properties that are known to exist within the study areas.

4.11.1 Archaeological Resources

Fort Detrick is located within the Monocacy River Drainage Basin of the Piedmont Physiographic Province, which is part of Maryland Archaeological Unit 17. According to the Fort Detrick ICRMP dated May 2012, previous archaeological surveys have recorded several prehistoric and historic artifacts and have identified eight sites. One NHRP-eligible archaeological site has been identified in Area A. The Nallin Farm site (18FR684) is associated with the NHRP-listed Nallin Farm in Area A (Goodwin and Associates, 2012).

4.11.2 Architectural Resources

According to the NHRP online database, there are four architectural historic properties listed on the National Register located within the confines of the study areas:

- One-Million-Liter Test Sphere (listed in 1977); NRHP Reference Number 77000696

  The One-Million-Liter Test Sphere (Building 527) is located in the southwest corner of Fort Detrick Area A and is listed on the NHRP due to its national significance in the scientific development of aerobiology and for its unique structural engineering. It consists of a 40-foot-diameter, gas-tight, steel sphere that was used for aerobiological studies of pathogenic agents from 1950 to 1970 (USAG, 2019).

- Nallin Farmhouse (listed in 1974) – NRHP Reference Number 74000951

  The Nallin Farmhouse (Building 1692) and its associated Bank Barn (Building 1655) and Springhouse (Building 1661), are listed on the NRHP for their local significance in 19th Century architecture and agriculture (USAG, 2019). The Nallin Farmhouse was constructed around 1830 during the Agricultural-Industrial Transition Period (1815-1870) and possesses characteristics of both a typical regional farmhouse and Federal-period architecture. The

Nallin Spring house and Bank Barn are representative of a construction period that dates to be 1798 (USAG, 2019). According to the MHT website, the Nallin Farm is historically significant for its association with typical agricultural practices in Frederick County from c. 1795-1943, when it was acquired by the federal government. The property illustrates the local pattern of German-influenced, diversified agriculture that typified the prosperous farming community (MHT, 2020).

- Nallin Farm Springhouse and Bank Barn (listed in 1977) – NRHP Reference Number 77000695 (2 structures)

  According to the MHT website, the precise age of these structures is not known, but both are typical of such rural outbuildings of the early 1800s and are architecturally in keeping with the Nallin Farmhouse. The bank barn and the springhouse embody the distinctive methods of stone construction and heavy timber framing of the late 18th century (MHT, 2020a).

Other buildings have been determined to be eligible for the NRHP, and are therefore subject to the regulatory requirements of the NHPA. They have not been formally listed on the NRHP (USAG, 2019). The Pilot Plant (Building 470), Boiler Plant (Building 190), Steam Sterilization Plant (Building 375), Medical Research Lab (Building 1301), R&D Greenhouse (Building 1302), Green House (Building 1303-1306), Laboratory (Building 1412), Incinerator (Building 1414), and Administration Building (building 1415) have all been determined to be eligible based on their associated with Cold War activities at Fort Detrick. These buildings are spread out and separated by modern infill (USAG, 2019).

4.12 Transportation and Traffic

Area A of Fort Detrick is bordered by Opposumtown Pike to the east and Rosemont Avenue/Yellow Springs Road to the west, with residential areas abutting the installation to the north and south as shown in **Figure 4-6** below. There are currently three access control points (ACPs) located on the installation property: the intersection of Yellow Springs Road and Doughten Drive to the west (Old Farm Gate); the intersection of Opposumtown Pike and Amber Drive to the east (Nallin Farm Entrance); and the intersection of Military Road, West 7th Street, and Veterans Drive to the south (7th Street Entrance) (USAG, 2019).

Within Area A of Fort Detrick, there are several main roads that travel throughout the property and connect to smaller side streets. From Opposumtown Pike, Porter Street travels west before curving north into Beasley Drive, providing a connection between the east and west areas of the installation. Ditto Avenue and Doughten Drive provide north-south routes between the southwest quadrant and northwest, residential quadrant (USAG, 2019).

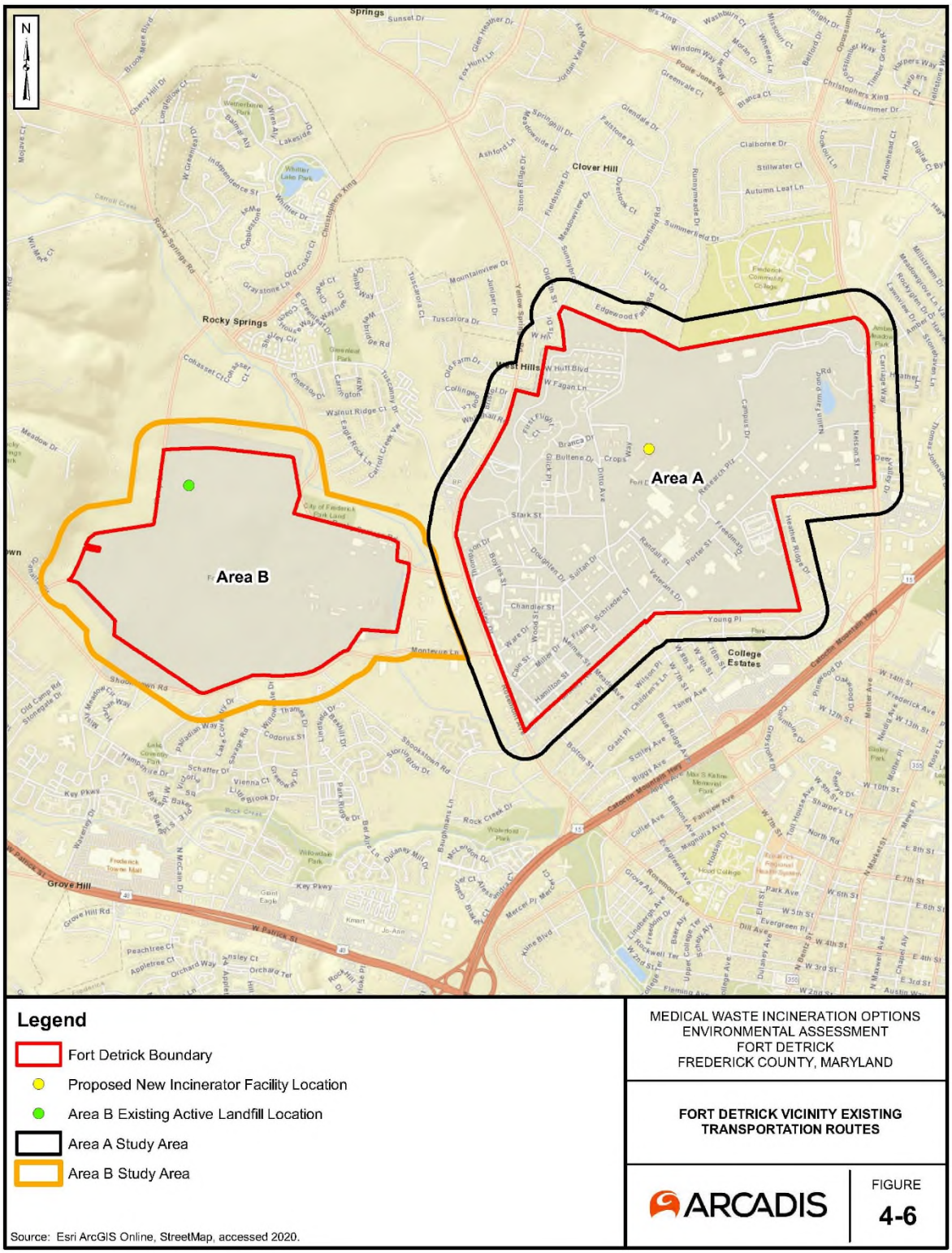
Based on a review of aerial imagery of Area A of Fort Detrick, on and off-street parking is available throughout the installation. The largest amount of parking is concentrated in the southwest

quadrant of the installation, where there are several off-street, surface lots and on-street parking spaces servicing the buildings in this area (USAG, 2019).

Area B of Fort Detrick is bounded to the west by Kemp Lane, to the south by Shookstown Road, to the east by Carroll Creek, and to the north by a large residential property. ACPs for Area B are located off Montevue Lane, and Rocky Springs Road. There are few roadways internal to Fort Detrick Area B, and in general roadways and parking areas are congregated in the eastern quadrant of Area B, located in proximity to the existing buildings.

As described previously in Section 4.3.2 Hospital, Medical, and Infectious Waste, Fort Detrick sends generated RMW, via contractor, to an off-site regulated medical waste incinerator. Transport of generated medical waste from Fort Detrick occurs up to three times per week utilizing local, county, regional, and interstate roadways. As described in Section 4.3.4 Solid Waste, MSW generated at Fort Detrick is currently transported by Fort Detrick to the County's disposal facilities located at Reichs Ford Road Landfill and Recycling Center using local and county roadways.

Figure 4-6: Fort Detrick Existing Transportation Network



4.13 Socioeconomics, Environmental Justice, and Protection of the Children

Socioeconomics describes a community by examining its social and economic characteristics. Demographic variables such as population size, level of employment, and income range assist in analyzing the fiscal condition of a community and its government, school system, public services, healthcare facilities and other amenities.

Socioeconomic data are provided in this section to establish baseline conditions. Data consist primarily of publicly available information about Frederick County.

EO 12898 declared that each federal agency will make environmental justice part of its mission. Environmental justice focuses on the protection for racial and ethnic minorities and/or low-income populations to be disproportionately affected by project-related impacts. Analysis of environmental justice is initiated by determining the presence and proximity of these segments of the population relative to the specific locations that would experience adverse impacts to the environment. As defined for the purposes of identifying relevant populations, minority areas are census block groups with a 50 percent or greater proportion of the population consisting of racial minorities, including those of Hispanic origin. Poverty areas are defined as census block groups where 20 percent or more of the population lives in households with incomes below the poverty line.

EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, requires federal agencies to identify, assess, and address disproportionate environmental health and safety risks to children from federal actions.

4.13.1 Population Trends

Table 4-6 shows population in Frederick County, the State of Maryland, and the United States from 1990 to 2010.

Table 4-6: Population, 1990-2010

AREA	1990	2000	2010	CHANGE 1990 TO 2000 (%)	CHANGE 2000 TO 2010 (%)	CHANGE 1990 TO 2010 (%)
Frederick County	136,694	195,277	233,385	30	17	42
Maryland	4.8 million	5.3 million	5.8 million	10	9	19
United States	249.6 million	282.2 million	309.3 million	13	10	21

Sources: Maryland Manual Online; U.S. Census American Fact Finder Profile of General Population and Housing Characteristics: 2010 (Frederick County)

4.13.2 Demographics

Table 4-7 shows Frederick County race in comparison to Maryland and the United States, according to the 2010 U.S. Census.

Table 4-7: Race, Alone or in Combination[1], 2010

AREA	WHITE (%)	BLACK OR AFRICAN AMERICAN (%)	ASIAN (%)	HISPANIC OR LATINO (%)	AMERICAN INDIAN OR ALASKA NATIVE (%)	NATIVE HAWAIIAN OR OTHER PACIFIC ISLANDER (%)
Frederick County	84	9.9	4.7	7.3	0.9	0.1
Maryland	60.4	30.9	6.4	8.2	1	0.2
United States	74.8	13.6	5.6	16.3	1.7	0.4

Source: U.S. Census American Fact Finder Profile of General Population and Housing Characteristics: 2010 (Frederick County)

Table 4-8 below presents data on educational attainment for Frederick County, the State of Maryland, and the United States as of the 2013-2017 5-year estimates.

Table 4-8: Educational Attainment[2], 2013-2017, 5-year Estimates

LEVEL OF EDUCATION	FREDERICK COUNTY (%)	MARYLAND (%)	UNITED STATES
Did not complete high school	7	10	13
High school or equivalent, no college	25	25	27
Some college or Associate degree	28	26	29
Bachelor's degree or advanced degree	40	39	31

Source: U.S. Census American Fact Finder Educational Attainment 2013-2017 American Community Survey 5-Year Estimates (Frederick County)

[1] Respondents were able to identify themselves as one or more races, so percentage totals may exceed 100 percent.
[2]Educational attainment for individuals aged 25 years or older.

4.13.3 Employment

Frederick County's three largest employers are Fort Detrick, Frederick County Public Schools, and Frederick Health (USAG, 2019). According to the City of Frederick, Fort Detrick employs approximately 6,4000 individuals, which includes military, civilian and National Cancer Institute employees (USAG, 2019). During the day, the population at Fort Detrick consists of military personnel, military family members residing on the Installation, DoD civilians, and civilian contractors. **Table 4-9** below provides labor force statistics for Frederick County, the State of Maryland, and the United States.

Table 4-9: Labor Force, Employment, and Unemployment 2013-2017 5-Year Estimates

AREA	LABOR FORCE	EMPLOYED	UNEMPLOYED	UNEMPLOYMENT RATE (%)
Frederick County	137,361	130,387	6,974	5.1
Maryland	3,239,167	3,040,792	198,375	6.1
United States	161,159,470	150,599,165	10,560,305	6.6

Source: U.S. Census American Fact Finder Selected Economic Characteristics 2013-2017 American Community Survey 5-Year Estimates (Frederick County)

4.13.4 Economy

The regional economic activity for the City of Frederick and Frederick County is influenced by Fort Detrick. Fort Detrick is a major driver of the Frederick economy. Fort Detrick has long been a major economic source in northeastern Maryland and is the single-largest employer in Frederick County with approximately 9,657 employees in the Military, Bioscience, and Communications industry sectors (City of Frederick, 2020).

4.13.5 Housing

Since 2004, soldier housing on Fort Detrick has been privatized through a project known as the Residential Communities Initiative (RCI). The statutory authority for RCI is 10 United States Code, Section 2878.

In general terms, RCI allows previously government owned soldier housing to be conveyed to a private company through a 50-year ground lease. Under RCI, the federal government retains the land and the private company manages the day to day needs of the project, such as the leasing of each unit and regular maintenance.

At Fort Detrick, the private company that manages the RCI project is Balfour Beatty Communities (BBC) LLC. BBC owns and manages 353 homes on Fort Detrick. While RCI is designed to appeal

to military members stationed either on Fort Detrick or other military installations located near Fort Detrick, in certain circumstances civilians are also able to rent from BBC.

The RCI project is located on the north and north-central portions of Fort Detrick near Ditto Avenue.

4.13.6 Environmental Justice

Three Presidential Executive Orders: *EO 12898, Federal Actions to address Environmental Justice in Minority and Low-Income Populations; EO 13084, Consultation and Coordination with Indian Tribal Governments; and EO 13045, Protection of Children from Environmental Health Risks and Safety Risks* apply to required compliance at Fort Detrick. The purpose of each of these Executive Orders is to avoid disproportionately high and adverse environmental, economic, social, or health impacts from federal actions and policies on these population groups.

On February 11, 1994, President Clinton issued Executive Order 12898, the purpose of which was to avoid the disproportionate placement of adverse environmental, economic, social, or health impacts from federal actions and policies on minority and low-income populations or communities. An element emanating from this Executive Order was the creation of an Interagency Federal Working Group on Environmental Justice composed of the heads of 17 Federal departments and agencies, including the Army. Each department or agency is to develop a strategy and implementation plan for addressing environmental justice.

It is the Army's policy to comply fully with Executive Order 12898, dated February 11, 1994 (Environmental Justice in Minority Populations), and requires that proponents of Federal projects assess potential impacts of proposed project on low income or minority populations. EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires Federal agencies to identify, assess, and address disproportionate environmental health and safety risks to children from federal actions. The term minority refers to people who classified themselves as African Americans, Asian or Pacific Islanders, American Indians, Hispanics of any race or origin, or other non-white races. Minority communities may be defined as areas where racial minorities comprise 50 percent or more of the total population or minority races comprise less than 50 percent of the total population. Low-income communities may be defined as those where 25 percent or more of the population is characterized as living in poverty (USAG, 2019).

The boundaries of Areas A and B of Fort Detrick are located entirely within Census Tracts 7512.01 and 7502.03, respectfully, and their associated study areas are located within portions of Census Tracts 7512.01, 7512.02, 7512.03, 7507.01,7507.02, 7505.03, and 7505.04, as shown on **Figure 4-7**.

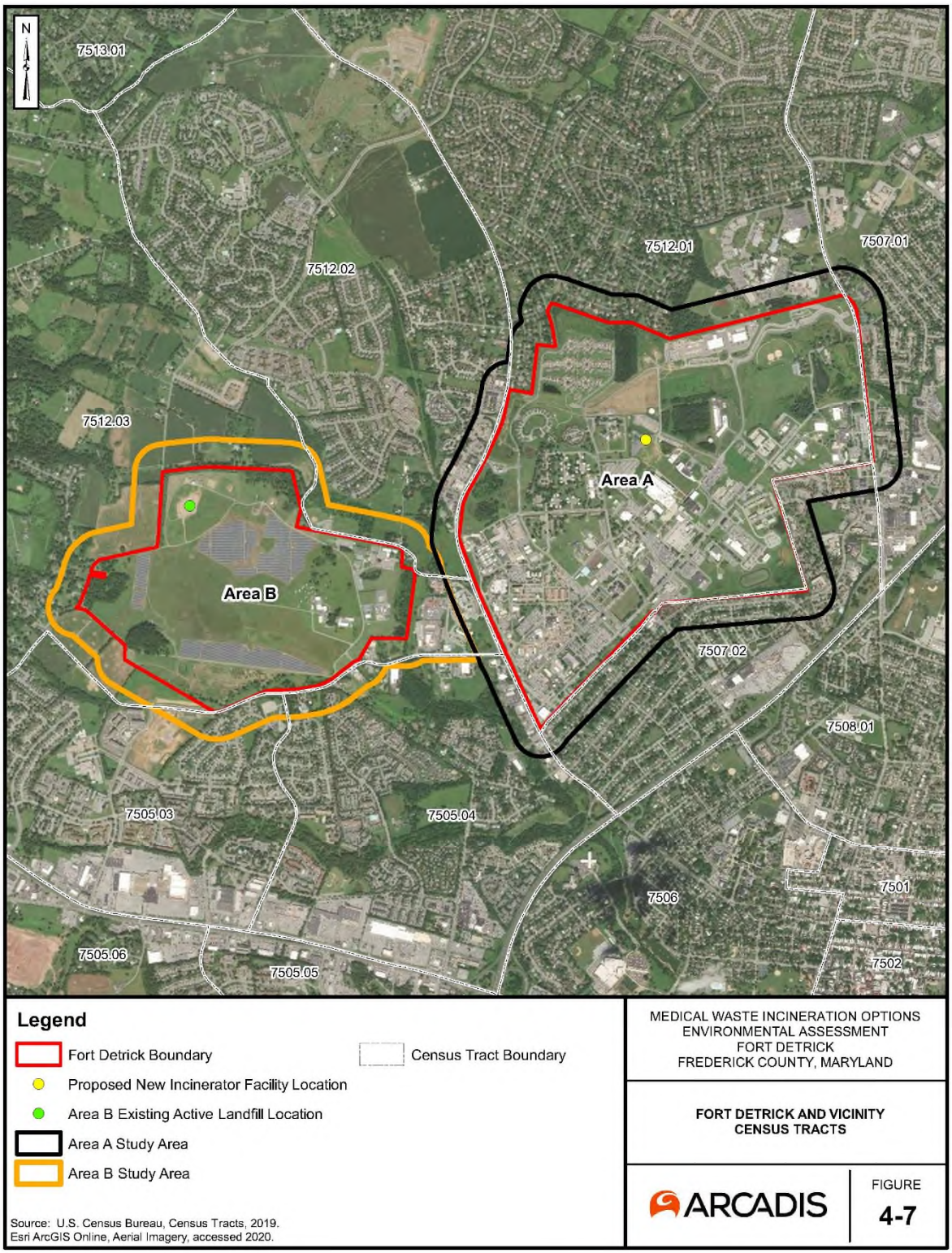
Table 4- **4-10** provides information characterizing the minority and below poverty line populations located within the study areas' census tracts.

Table 4-10: Minority Population and Poverty Areas within Proposed Project Study Areas

CENSUS TRACT	TOTAL POPULATION	MINORITY POPULATION	PERCENTAGE MINORITY (%)	PERCENTAGE BELOW POVERTY LINE (%)
7512.01	4,986	1,720	34.5%	3.60%
7512.02	6,020	1,940	32.23%	5.91%
7512.03	2,111	207	9.81%	3.82%
7507.01	5,192	2,252	43.37%	2.89%
7507.02	3,731	1,767	47.36%	14.53%
7505.03	6,646	4,552	68.49%	10.25%
7505.04	6,022	4,050	67.25%	16.06%

Source: 2019 FFIEC Census Report – Summary Census Demographic Information (Frederick County); 2019 FFIEC Census Report – Summary Census Income Information (Frederick County).

Figure 4-7: Project Vicinity Census Tracts



5 SUMMARY OF ENVIRONMENTAL IMPACTS

The following section describes the anticipated environmental impacts associated with implementing the Proposed Action and the No Action Alternative. The No Action alternative acts as a baseline condition, assuming the Proposed Action would not take place and the RMW generated at Fort Detrick would continue to be transported off-site by contractor for incineration.

The method used to evaluate the overall importance of each impact was based on the following criteria:

1. **Nature** (beneficial, neutral, or adverse, direct, indirect, or cumulative)

   The nature of the impact can be described as positive (beneficial) or negative (adverse). Positive impacts enhance the quality or access to a resource, while negative impacts degrade the quality or limit access to the resource. Impacts are also described as direct or indirect. A direct impact is as an immediate result of an activity. An indirect impact arises from a project activity at the secondary level.

2. **Duration** (temporary or permanent)

   The duration of an impact can be temporary or permanent.

3. **Areal extent** (regional, local, or isolated)

   The areal extent of an impact refers to its area of influence and can be regional, local, or isolated to a particularly small and well-defined area. An impact of regional extent exerts an influence far beyond the surroundings of the project area. The local area of influence refers to the communities located near Fort Detrick that could be affected by the project. An isolated impact is limited in extent to a small, readily defined area.

4. **Intensity**

   The intensity of an impact concerns the scale or size of the impact on a resource. Intensity is evaluated as negligible, minor, moderate, or significant. A description of each measure of intensity is as follows:

- *Negligible:* This term indicates that the environmental impact is barely perceptible or measurable, remains confined to a single location, and would not result in a sustained recovery time for the resource impacted (days to months).
- *Minor:* This term indicates that the environmental impact is readily perceptible and measurable; however, the impact would be temporary and the resource should recover in a relatively short period of time
- *Moderate:* This term indicates that the environmental impact is perceptible and measurable, and/or may not remain localized, thus impacting areas adjacent to the

Proposed Action. Under the impact, recovery of the resource may require several years or decades.

- *Significant:* This term indicates significant impacts would occur. Under a significant impact, a resource may not recover and mitigation measures are considered to reduce the impact.

This section is organized by resource area following the same sequence as in the preceding Section 4.0. This section, however, also includes a discussion of other environmental effects, including cumulative impacts and irretrievable commitment of resources that requires mitigation.

5.1 Land Use

5.1.1 Environmental Criteria

The Proposed Action would be considered to have a significant effect on land use if:

- It is inconsistent with existing land use plans or policies;
- It eliminates the viability of existing land use;
- Surrounding land use would be expected to change substantially in the short or long term;
- It conflicts with adjacent land use to the extent that public health or safety is threatened; and
- It is incompatible with planning criteria that ensures the safety and protection of human life and property.

5.1.2 Impacts from the Proposed Action

The Proposed Action would not result in significant adverse impacts to land use within the study areas. The proposed location for the new on-site incinerator is located in a central, interior area of Fort Detrick Area A, an area designated for Medical Research land use types. The proposed project site is located in a previously disturbed area of less than 5 acres, in the cantonment area, adjacent to existing occupied buildings. The nature of the RMW incinerator would be consistent with the nature of other facilities located in the same area in that it would dispose of wastes generated in the labs located in proximity to the incinerator. It is anticipated that the proposed HMIWI facility would be constructed in an area which is already generally comprised of existing buildings and labs and has a currently vacant area suitable for additional construction. The Proposed Action would add approximately 10,000 square feet of permanent impervious surface at the proposed site due to proposed construction of the incinerator plant building.

Transportation of ash resulting from the proposed incineration process would occur along existing roadways, primarily Rosemont Ave. and Montevue Lane, between Area A and Area B, where the existing land use category is considered to be “Institutional”. Transportation of incinerator ash through the “Institutional” land use category would not change, modify, or impact that land use

category. In addition, the transport of incinerator ash from the proposed on-site incinerator facility to the existing landfill in Area B is a resumption of the previous operation of incinerating RMW on-site and disposing of the ash at the on-site landfill via the same transportation route. Landfilling of incinerator ash in the existing solid waste landfill located on Area B would also be compatible with the current land use in that location (Permitted Active Municipal Landfill).

The Proposed Action would not create a land use incompatibility and is anticipated to comply with existing land uses located in proximity to activities associated with the Proposed Action. The proposed action would not impact any land use control areas identified by the IRP.

The Proposed Action could have either negligible or long-term beneficial impacts on land use. The Proposed Action would ensure that all activities associated with Ft. Detrick's RMW, from generation through treatment and disposal, would take place on-site, except for transportation of incinerator ash from Area A to Area B's landfill. All activities, including transport are anticipated to be compatible with the existing land uses where activities occur, and therefore, no activities associated with the process of RMW incineration, including transport of ash, would take place within land use areas that are officially categorized for residential, neighborhood commercial, park, or similarly sensitive land uses, although several residential homes and intermittent parks are located in the area. Fort Detrick's mission would be able to continue with implementation of the Proposed Action alleviating the current need to transport treated RMW through local, county, and interstate roadways. During the construction process, short-term, minor impacts could occur to land use through the use of construction vehicles but would cease once construction activities associated with the Proposed Action are complete.

5.1.3 Impacts from the No Action Alternative

The No Action Alternative would not allow for retention of complete control over activities associated with RMW from on-site generation through disposal, and would continue the transport of RMW through public roadways from Fort Detrick to an off-site regulated medical waste incinerator. In the event of an accident resulting in potential spillage during transport, land use incompatibilities could be created at and surrounding the location of the accidental spill resulting from the presence of spilled materials and resulting cleanup actions. The No Action Alternative could provide for moderate adverse, short-term or long-term impacts to land use in the event of an accidental spillage during transport.

5.2 Air Quality

5.2.1 Environmental Criteria

The Proposed Action would be considered to have a significant effect on air quality and greenhouse gases if it resulted in:

- an impact that caused the Proposed Action to not conform with the state's implementation plan purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of the NAAQS; or
- an impact that causes any new violation of any standard in any area; or
- an impact that increases the frequency or severity of any existing violation of any standard; or
- an impact that causes a delay in timely attainment of any standard or any required interim emission reductions or other milestones in any area; or
- an impact that substantially increased GHG emissions such that there would be a noticeable increase in overall global temperature, independent of cumulative impacts.

5.2.2 Impacts from the Proposed Action

A General Conformity Applicability Analysis was performed for the Proposed Action, which estimated the level of potential NOx and VOC air emissions from construction activities. The analysis was limited to NOx and VOC emissions because these pollutants are precursors to ozone for which Frederick County is in nonattainment of the 2015 8-hour ozone NAAQS. The analysis is only required for nonattainment pollutants. Frederick County is in attainment for the CO, NO_2, SO_2, lead (Pb), $PM_{2.5}$, and PM_{10} NAAQS, so these pollutants are not required to be included in the analysis. **Table 5-1** below shows the estimated NOx and VOC emissions for a 12-month period from construction emissions associated with the Proposed Action. Calculations were derived from estimated combustion equipment activities in one fiscal year. The Proposed Action is not anticipated to result in any adverse effects to Air Quality. As demonstrated, the estimated emissions are well below the de minimis thresholds.

Table 5-1: Estimated Annual Construction Emissions from Proposed Action

Pollutants	**VOC**	**NO_X**
Proposed Action Emissions (tons/year)	4.9	46.5
De minimis threshold (tons/year)[1]	50	100
Exceeds de minimis thresholds?	No	No

[1] Frederick County is a marginal nonattainment area for the 8-hour O_3 NAAQS (VOCs and NO_x are precursors to the formation of O_3). *De minimis* thresholds are defined in 40 CFR 93 Section 153. VOC *de minimis* established for nonattainment areas located in an O_3 transport area.

Operational emissions for the Proposed Action are not included in the General Conformity Applicability Analysis because they are subject to local agency new source review air permitting requirements and are therefore excluded from the General Conformity Applicability Analysis pursuant to 40 CFR 93.153(d)(1). Under this regulation, a conformity determination is not required for the portion of an action that includes major or minor new or modified stationary sources that require a permit under the new source review program or the prevention of significant deterioration

program. Therefore, emissions from the routine operations of the new HWIMIs need not be included in the General Conformity Applicability Analysis.

The Proposed Action would result in temporary, localized changes to air quality as a result of emissions from the construction equipment, worker transport, and highway traffic. Criteria and hazardous air pollutant emissions from the operation of construction vehicles would be temporary and localized. The Proposed Action would be undertaken in compliance with state and federal standards for air quality. Applicable NEPA considerations would be made and the resulting documentation (if any) would be kept on file.

Coordination with MDE prior to project initiation would determine the applicability of permits required. The Proposed Action would be initiated only after the environmental review has been completed and the appropriate air permits are acquired. The Proposed Action would require two separate permitting actions with MDE: 1) apply for and obtain an air Permit to Construct and 2) incorporate the new HMIWI and associated compliance requirements into the facility's Title V operating permit with an administrative amendment or consent decree. The permitting process will include MDE regulatory and technical review of the proposed HMIWI and opportunity for EPA and the public to review and comment.

The Proposed Action would be subject to 40 CFR Part 60, Subpart Ec (NSPS Subpart Ec), Standards of Performance for New Stationary Sources: Hospital/Medical/Infectious Waste Incinerators, found at 40 CFR §60.50c, et. seq. This rule specifies emission limits for several pollutants and compliance requirements for new HMIWIs including requirements for fugitive fly ash/bottom ash emissions (where applicable), HMIWI operator training and qualification requirements, waste management requirements, and siting requirements. NSPS Subpart Ec establishes numerical emission limits for the pollutants listed in **Table 5-2**.

Table 5-2: Emissions Limits for Small, Medium, and Large HMIWI at Affected Facilities as Defined in §60.50c(a)(3) and (4) [1]

Pollutant	Units (7 percent oxygen, dry basis)	Emissions limits		
		HMIWI size		
		Small[2]	Medium[3]	Large[4]
Particulate matter	Milligrams per dry standard cubic meter (grains per dry standard cubic foot)	66 (0.029)	22 (0.0095)	18 (0.0080)
Carbon monoxide	Parts per million by volume	20	1.8	11

Pollutant	Units (7 percent oxygen, dry basis)	Emissions limits		
		HMIWI size		
		Small[2]	Medium[3]	Large[4]
Dioxins/furans	Nanograms per dry standard cubic meter total dioxins/furans	16	0.47	9.3
	(grains per billion dry standard cubic feet)	(7.0)	(0.21)	(4.1)
	Or			
	nanograms per dry standard cubic meter TEQ[5]	0.013	0.014	0.035
	(grains per billion dry standard cubic feet)	(0.0057)	(0.0061)	(0.015)
Hydrogen chloride	Parts per million by volume	15	7.7	5.1
Sulfur dioxide	Parts per million by volume	1.4	1.4	8.1
Nitrogen oxides	Parts per million by volume	67	67	140
Lead	Milligrams per dry standard cubic meter	0.31	0.018	0.00069
	(grains per thousand dry standard cubic feet)	(0.14)	(0.0079)	(0.00030)
Cadmium	Milligrams per dry standard cubic meter	0.017	0.0098	0.00013
	(grains per thousand dry standard cubic feet)	(0.0074)	(0.0043)	(0.000057)
Mercury	Milligrams per dry standard cubic meter	0.014	0.0035	0.0013
	(grains per thousand dry standard cubic feet)	(0.0061)	(0.0015)	(0.00057)

1: Per Table 1B of NSPS Subpart Ec

2: maximum design waste burning capacity less than or equal to 200 lb/hr

3: maximum design waste burning capacity more than 200 pounds per hour but less than or equal to 500 lb/hr

4: maximum design waste burning capacity more than 500 lb/hr

5: Toxic Equivalency

Compliance with the NSPS Subpart Ec emission limits in **Table 5-2** would be a requirement of the Permit to Construct and the modified Title V operating permit. Initial and annual performance testing along with the continuous monitoring of control equipment parameters may be required to

demonstrate initial and continuous compliance with permit conditions and the NSPS Subpart Ec emission limits.

The design for the proposed HMIWI facility has not been finalized, but is expected to consider the following criteria:

- Two HMIWI units would be constructed for redundant capacity. The proposed HMIWIs would not operate at the same time unless required under unusual circumstances and allowed by the air permits.
- Each proposed HMIWI would be either medium size (200 – 500 lb/hr waste burning capacity) or large size (more than 500 lb/hr waste burning capacity).
- The primary fuel for each proposed HMIWI would be natural gas.
- Combustion in each proposed HMIWI would occur at or above 1,000°C/1,832°F to destroy prions. Prions are misfolded proteins with the ability to transmit their misfolded shape onto normal variants of the same protein.
- Each proposed HMIWI must meet the NSPS Subpart Ec pollutant limits and may employ add-on control technology beyond the inherent modern design of the units to do so. These control technologies may or may not include devices such as rotary atomizing scrubbers, pre- and post-particulate filters, activated carbon adsorption media, or other technologies.

Operational emissions from the proposed HMIWI facility are unknown because design has not been finalized. Estimated emissions are presented in **Table 5-3** based on the last full operational year of the decommissioned HMIWIs in 2017 when 497 tons of RMW were incinerated, and is representative of the projected waste throughput of the proposed new HMIWIs (Fort Detrick 2020). Emissions are based on a combination of emission factors from past stack testing of the decommissioned HMIWIs and from EPA document AP-42, Fifth Edition, Volume I, Chapter 2.3, Medical Waste Incineration, July 1993, and Chapter 2.1, Refuse Combustion, October 1996. These are the most recent versions of these chapters from EPA. Note that AP-42 emission factors are typically conservative and may tend to overestimate actual potential emissions. Modern incinerators and controls that would be used for the Proposed Action can reasonably be expected to produce emissions less than those in **Table 5-3** and will be an improvement over the 30-year old technology employed by the former HMIWI.

Table 5-3: Estimate of Operational Emissions for the Proposed HMIWI Facility

Pollutant	Emissions (tons/yr)[1]
NOx	0.28
CO	2.34E-03
SO_2	5.34E-03

Pollutant	Emissions (tons/yr)[1]
PM	0.054
Lead	3.22E-04
VOC	negligible
HCl	3.38E-03
Polychlorinated Biphenyls	1.16E-05
Antimony	3.18E-03
Arsenic	5.96E-05
Beryllium	5.71E-07
Cadmium	4.73E-05
Chromium	1.94E-04
Manganese	1.41E-04
Mercury	6.89E-06
Nickel	1.47E-04
Hydrogen Fluoride	0.037
Dioxins/Furans	1.16E-11
CO2e	446 metric tons

[1] Emissions are estimated using stack test results and emission factors provided for Medical Waste Incineration under USEPA AP-42, Chapters 2.1 (10/96) and Sec. 2.3 (7/93).

The new HMIWI facility would be comprised of modern units and the operational emissions from the Proposed Action are expected to be less than the emissions from the decommissioned HMIWIs that were installed in 1995. The modern units will be representative of maximum achievable control technology.

The Permit to Construct application process would include a best available control technology review for toxics known as T-BACT and an ambient impact compliance demonstration.

The T-BACT control technology review is a top-down demonstration of pollutant control strategies (including pollution prevention techniques) for the proposed equipment starting with the most effective strategy. T-BACT is that control strategy that reduces the most toxic air pollution while still being cost effective. The T-BACT demonstration must consider the full range of control options available and choose the most effective means of limiting Toxic Air Pollutant (TAP) emissions, subject only to a showing of compelling reasons of economic or energy impracticality.

MDE rules allow the project proponent to use a top-down approach to evaluate control options:

- Step 1 - Determine the most effective control option for similar or identical sources. If it can be shown that the most effective control option is not technically or economically feasible for this project, then the next most effective control option must be considered.
- Step 2 - This iterative process is continued until a T-BACT is selected that is effective in limiting emissions of TAPs and is technically and economically feasible.

MDE rules allow the project proponent to use a tiered approach for the ambient impact compliance demonstration:

- Step 1 – Determine if proposed emissions exceed allowable emissions rates set by MDE. If proposed emissions do not exceed the allowable emissions, compliance is demonstrated with ambient impact criteria. If proposed emissions exceed the allowable emissions, the proponent proceeds to Step 2.
- Step 2 – Conduct screening modeling to determine if projected ambient impacts from the proposed emissions exceed allowable impacts set by MDE. Screening modeling is done with EPA-approved computer models such as SCREEN3, TSCREEN, or AERSCREEN. These computer models are relatively simple to use and combine site-specific information such as stack height, exit gas temperature, and other physical properties with generic weather information to predict ground level concentrations of pollutants. If the projected impacts do not exceed the allowable impacts, compliance is demonstrated with ambient impact criteria. If the projected impacts exceed the allowable impacts, the proponent proceeds to Step 3.
- Step 3 – Conduct refined air dispersion modeling using an EPA-approved computer model to determine if projected ambient impacts from the proposed emissions exceed allowable impacts set by MDE. A commonly used refined model is AERMOD. Refined computer models are highly specialized programs that use site-specific information such as stack height, exit gas temperature, and other physical properties with five years of local weather information to predict ground level concentrations of pollutants with a higher degree of accuracy relative to screening models. If the projected impacts do not exceed the allowable impacts, compliance is demonstrated with ambient impact criteria. If the projected impacts exceed the allowable impacts, iterations of refined modeling are run with different design and/or operational parameters for the proposed facility until a scenario is identified that does not exceed the allowable impacts.

Ultimately, the Proposed Action must demonstrate it meets the T-BACT requirements and the ambient impact criteria before a Permit to Construct can be issued by MDE.

Fort Detrick would be required to demonstrate compliance with the NAAQS for the criteria pollutants emitted from the new proposed HMIWI operations. Similarly, the application processes

would also require an ambient impact analysis to show that the facility's impact of each TAP is less than the MDE established benchmarks called screening levels that are protective of public health. The NAAQS and TAP impact analysis may require the use of screen modeling (SCREEN3 or AERSCREEN) or, possibly, computer dispersion models and actual nearby meteorological data to predict the ground level concentrations of pollutants. MDE typically requires the applicant to demonstrate compliance with the ambient impact requirements at and beyond the property line of the source. This ambient air boundary is usually interpreted as the facility fence line and gates where general public access to the facility is controlled. Under this interpretation, the ambient air boundary could be defined as the Area A fence line for the Proposed Action and impacts would be assessed from this boundary and beyond. There are exceptions to this delineation of ambient air. If MDE believes there is potential risk to public health at locations within the facility's fence line, MDE may, at its discretion, ask the applicant to assess impacts at those locations for compliance with the ambient impact requirements. For example, MDE may require assessment of potential impacts starting at the fence line of the HMIWI facility or the HMIWI facility's perimeter footprint boundary if there is no fence line, instead of starting at the Area A fence line and assessing impacts outward. This would address receptors within Area A, from the HMIWI facility boundary outward and beyond the Area A fence line. Ultimately, the area to be assessed for potential impacts from the Proposed Action would be determined through pre-application discussions with MDE. These situations are evaluated on a case by case basis. A Permit to Construct would not be issued if the criteria pollutant or toxics analysis fails to demonstrate compliance with the NAAQS or TAP screening levels. Wind-rose plots for the years 2015 through 2019 were prepared to study the prevailing winds in the area of the Proposed Action and understand the dominant direction to which the pollutants may likely be dispersed. The nearest reliable meteorological data proximal to Fort Detrick are from the Frederick Municipal Airport located about 5 kilometers from the new HWIMI location and these were used for the plots provided in **Figures 5-1 through 5-5**. Based on the airport data, the most predominant winds in this area come from the north-northwest and flow southeast. The second predominant wind direction is from the southeast to the northwest.

Figure 5-1: Frederick Municipal Airport Wind Rose Plot 2015

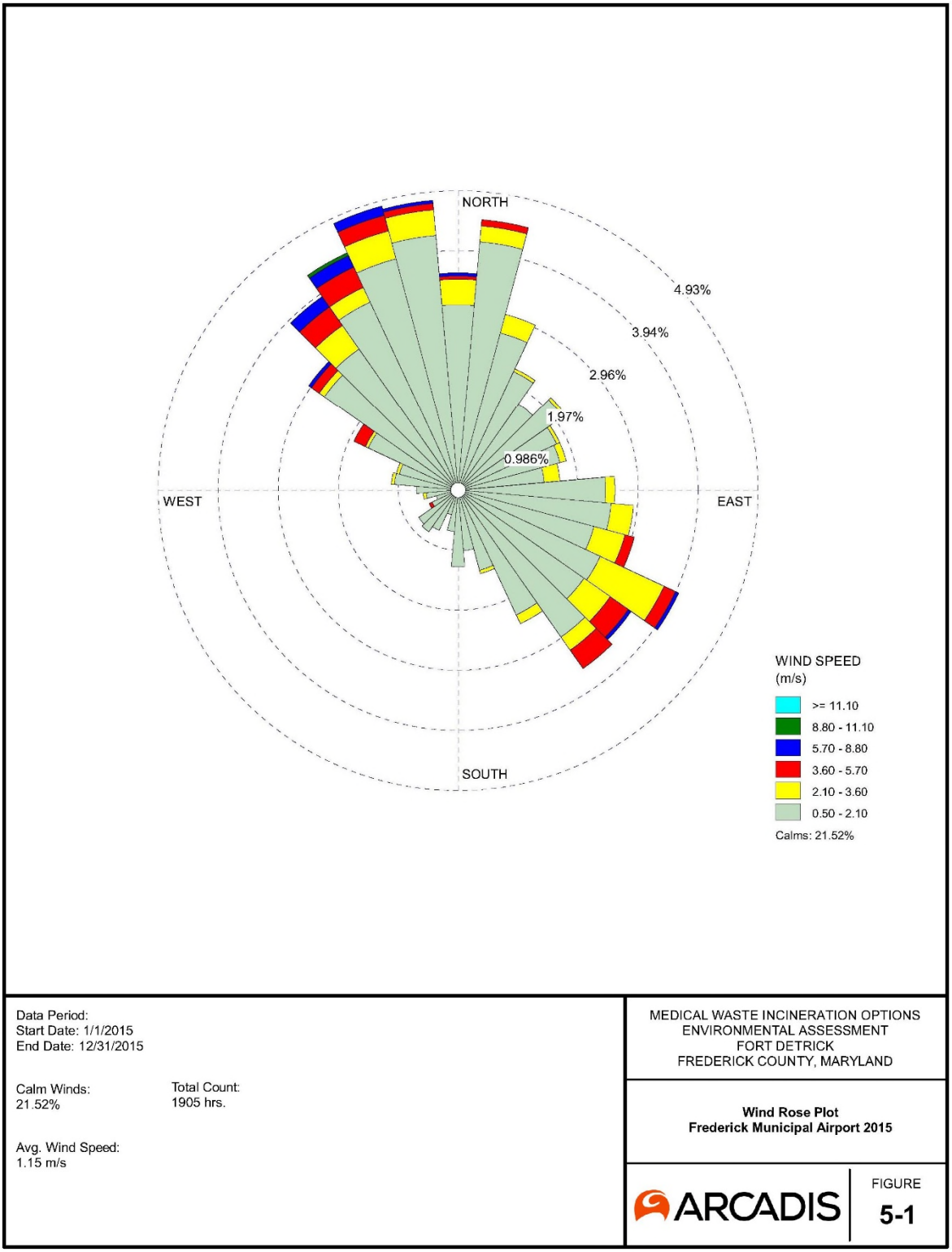


Figure 5-2: Frederick Municipal Airport Wind Rose Plot 2016

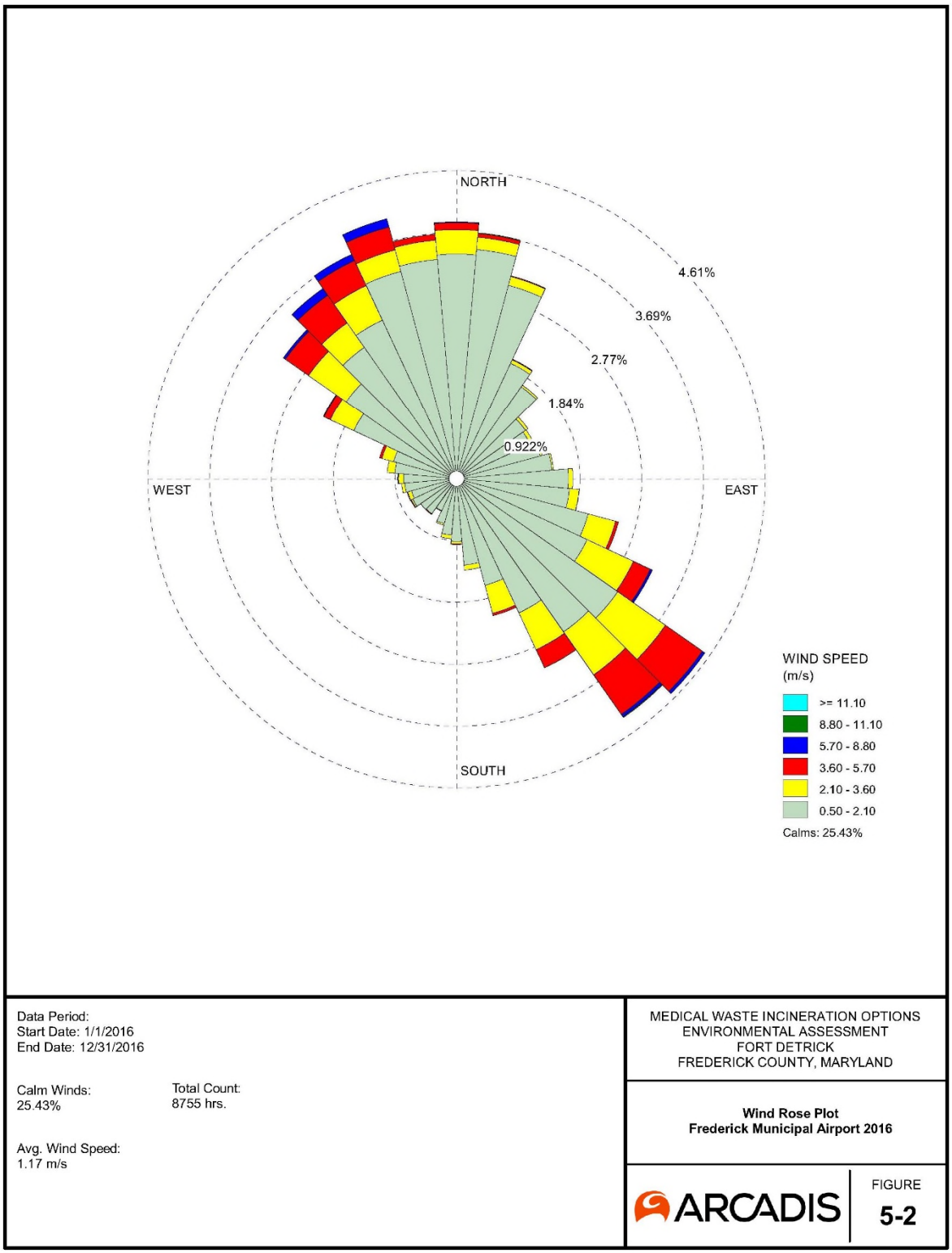


Figure 5-3: Frederick Municipal Airport Wind Rose Plot 2017

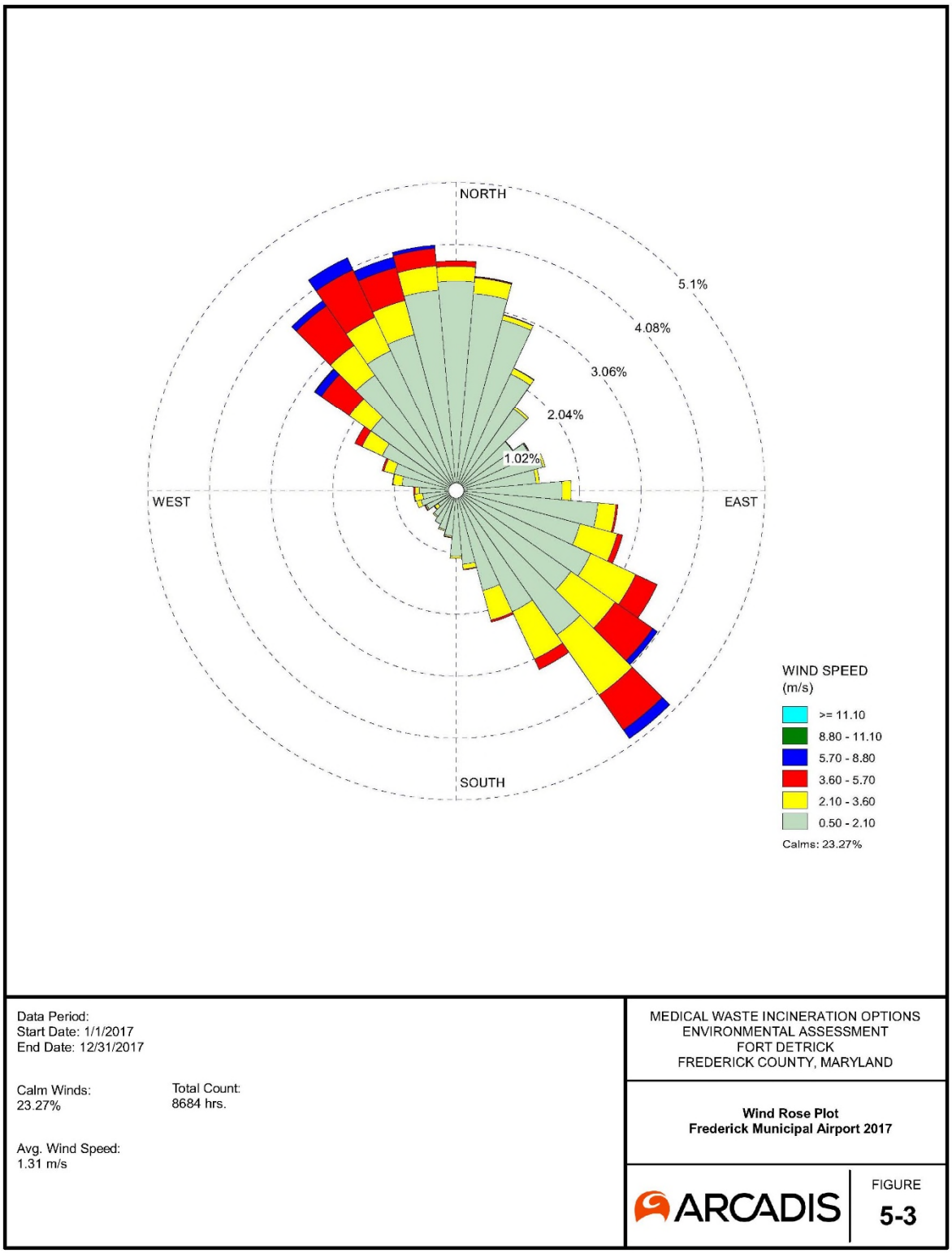


Figure 5-4: Frederick Municipal Airport Wind Rose Plot 2018

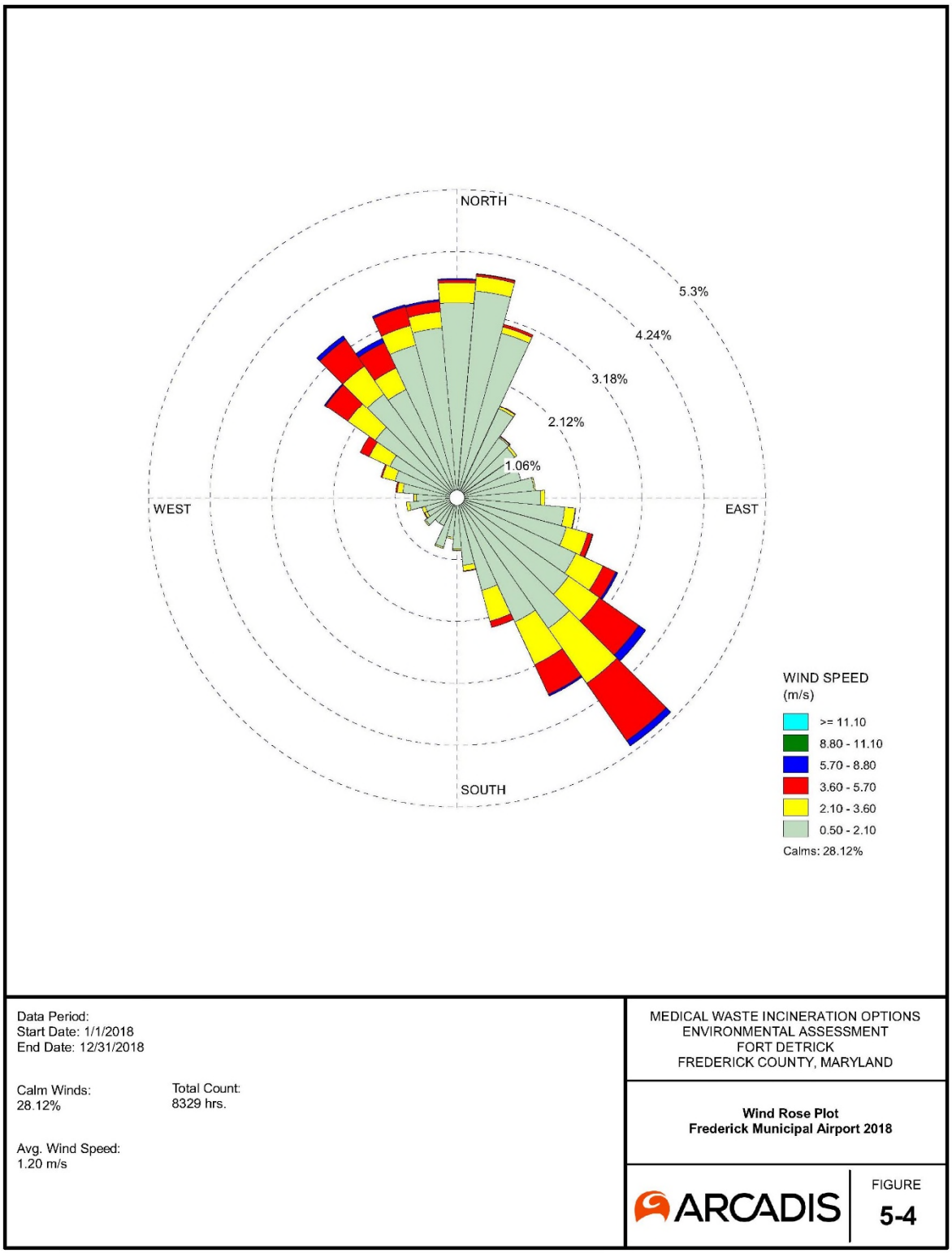
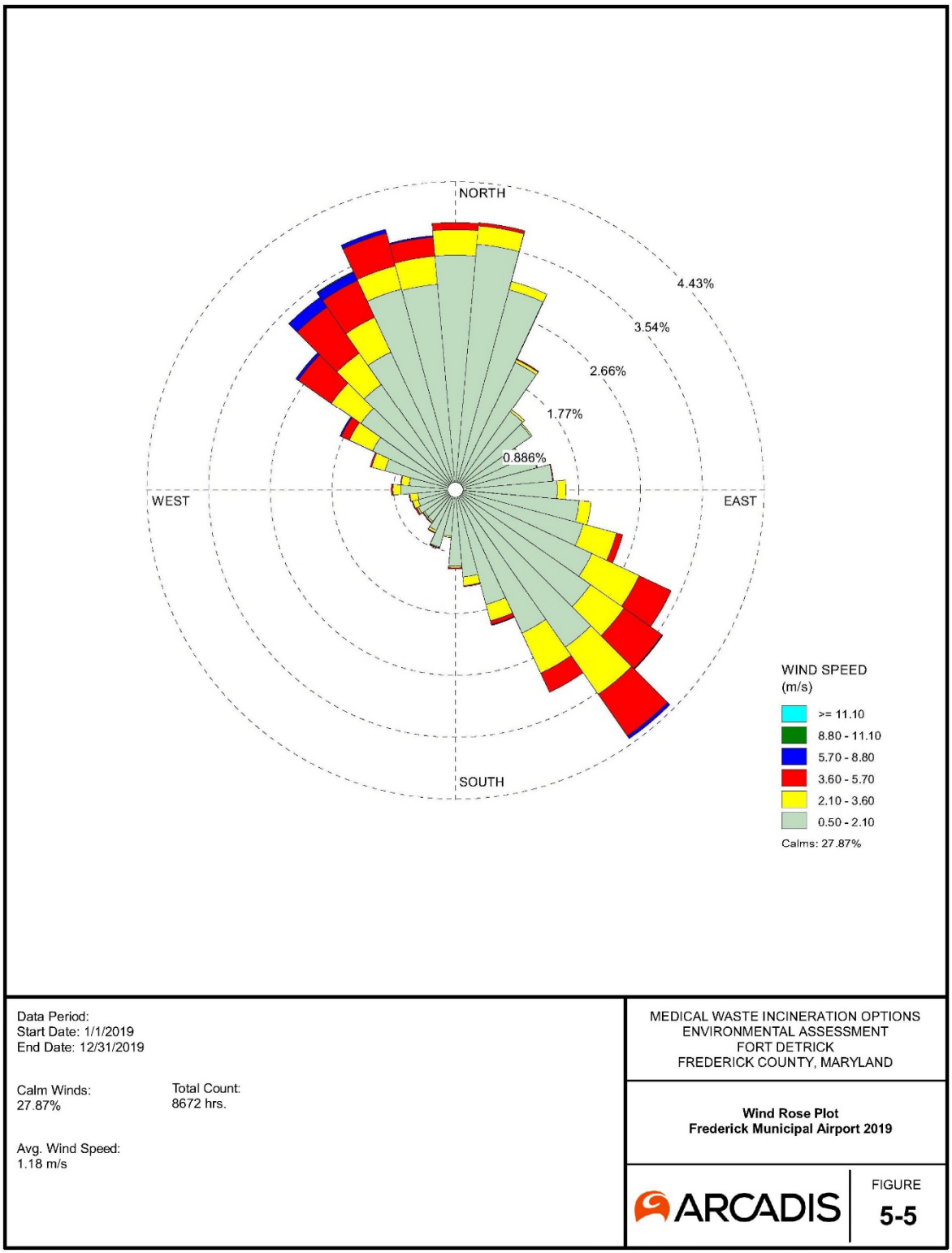


Figure 5-5: Frederick Municipal Airport Wind Rose Plot 2019



As part of the air permitting process, the draft Permit to Construct and the draft modified Title V permit (before being issued as final) would be made available to the general public and other interested parties for review and opportunity to provide written comments or request a public hearing. Affected states' air pollution control departments are provided an opportunity to review and comment on the permit. The USEPA is provided a 45-day review period to comment on proposed revised permits. After the 45-day USEPA review, citizens are provided an opportunity to petition the EPA and object to the proposed permit.

The CO_2e emissions from the Proposed Action construction activities are estimated to be 6,358 tpy. It is anticipated that the Proposed Action would not cause a perceivable impact because the increase in GHG emissions would be temporary and would not contribute long-term to Fort Detrick's overall CO_2e emissions. On a long-term basis, the Proposed Action would eliminate GHG emissions from transportation of RMW to outside the local area for incineration. Mitigation efforts to reduce GHGs can be implemented by maintaining emission control technology on construction equipment. Fort Detrick would include GHG emissions from the routine HWIMI operations and continue to report GHG emissions in the future as part of the Title V operating permit requirements.

5.2.3 Impacts from the No Action Alternative

Under the No Action Alternative, no activities would take place and general emissions would stay at their current rate with no operation of a HMIWI at Fort Detrick and with continued transportation of RMW to an off-site disposal facility. Emissions from off-site incineration would still occur and include transportation emissions as well.

5.3 Hazardous and Toxic Materials, and Solid Wastes

5.3.1 Environmental Criteria

The Proposed Action would result in significant adverse impacts to the environment if:

- Proposed RMW incineration activities resulted in: a long-term (i.e., period of 5 years or more beyond completion of the project implementation) increase in the amount of hazardous materials or wastes to be handled, stored, used or disposed of;
- It results in non-compliance with the existing Fort Detrick Integrated Solid Waste Management Plan;
- Non-compliance with applicable federal and state regulations; and/or
- Increased site contamination that could preclude future use of the proposed site.

5.3.2 Impacts from the Proposed Action

5.3.2.1 Hospital, Medical, and Infectious Waste

The Proposed Action would not change the quantity of RMW generated at Fort Detrick from the present scenario. The end user for the proposed HMIWI facility would be U.S. Army Garrison at Fort Detrick. The incinerator would support the hazardous medical waste requirements from the medical research laboratories and medical/dental treatment facilities at Fort Detrick. The Proposed Action would ensure that all activities associated with Fort Detrick's RMW, from generation through treatment and disposal, would take place on-site, except for transportation of incinerator ash from Area A to Area B's landfill. The distance travelled from the perimeter gate on Area A to the perimeter gate on Area B is much less than the distance currently travelled from the perimeter gate on Area A to an off-site regulated medical waste incinerator, and therefore, the length of exposure to off-site resources would be greatly reduced, and all wastes would remain under Fort Detrick's control.

The active municipal waste landfill located on Area B is licensed and permitted to accept the ash that would result from the proposed incineration process and has adequate capacity to do so. All ash resulting from the incineration process would be rendered non-hazardous from the incineration process itself. Therefore, no hazardous wastes would be introduced into the existing active municipal landfill located in Area B of Fort Detrick.

5.3.2.2 Hazardous Waste and Existing Contamination

Based on Fort Detrick's potential for contaminated soils and groundwater due to historical testing, training, manufacturing, and disposal activities, it is possible, though unlikely, that construction workers may encounter hazardous materials when working at the proposed HMIWI facility location on Area A. Contractual obligations in the construction documents would require contractors to adhere to all applicable local, state and Federal regulations pertaining to contaminated and hazardous materials, including, but not limited to, those regarding handling, transport, and proper disposal. In the event that hazardous waste dust is produced as byproduct of the incineration process, the dust would be collected, containerized, and hauled off-site to a facility licensed and permitted to accept the waste for disposal.

No new construction or ground disturbance is proposed to take place on Area B. Incinerator ash would be landfilled in the existing active municipal landfill located on Area B, in accordance with the current State of Maryland Refuse Disposal Permit No. 2015-WMF-0327. All existing landfill caps in proximity to the existing active municipal landfill would remain uncompromised and intact, and no Area B (FTD 72/OU-14) groundwater associated with the NPL listing would be encountered as a result of the Proposed Project.

The Proposed Action would ensure that all activities associated with the treatment, disposal, and transport of RMW would remain within Fort Detrick's control and would no longer involve contractor transport or disposal of RMW outside of the local area. It is not anticipated that the Proposed Action would result in a substantial quantity of construction debris or wastes. Contractors, with government oversight and coordination, would be legally responsible for the proper disposal of these wastes in accordance with all federal, state, and Fort Detrick regulations. Therefore, it is not anticipated that the Proposed Action would cause significant adverse impacts to hazardous wastes, and instead, it is anticipated that the Proposed Action would have moderate, long-term beneficial impacts to hazardous wastes.

5.3.2.3 Solid Waste

Ash resulting from the proposed incineration process would be disposed of in the existing active municipal solid waste landfill located on Fort Detrick's Area B. The active municipal waste landfill located on Area B is licensed and permitted to accept the ash that would result from the proposed incineration process and has adequate capacity to do so. All ash resulting from the incineration process would be rendered non-hazardous from the incineration process itself. It is not anticipated that the Proposed Action would result in a substantial quantity of construction debris or wastes. Contractors, with government oversight and coordination, would be legally responsible for the proper disposal of these wastes in accordance with all federal, state and Fort Detrick regulations. Therefore, it is not anticipated that the Proposed Action would cause significant adverse impacts to solid waste.

5.3.2.4 Pesticides

No impact to pesticides is anticipated. Pesticide-contaminated soils and sediments would be handled in accordance with federal, state, and Fort Detrick regulations. Pesticides are normally well controlled and are subject to rigorous management controls, thus the Proposed Action is not anticipated to result in significant adverse impacts associated with pesticides.

5.3.2.5 Installation Restoration Program

No significant adverse impacts are anticipated to the IRP sites under the Proposed Action. A discovery of a previous contamination would have to be added to the IRP and could be subject to the CERCLA process. Based on investigations completed to date, there is no evidence of past environmental contamination that would impact the construction of the proposed project. Fort Detrick has an IRP due to historic activities. If a release does not occur, no impacts are expected from the Proposed Action. Any spills that have the potential to occur would be properly handled under state, federal, and Fort Detrick guidelines. Therefore, it is not anticipated that the Proposed Action would result in significant adverse impacts to the IRP.

5.3.3 Impacts from the No Action Alternative

Under the No Action alternative, decontaminated RMW would continue to be transported by contractor from Fort Detrick's Area A to an off-site regulated medical waste incinerator. The No Action scenario would not address the potential for accidents during transport of decontaminated RMW on public thoroughfares for the distance between Fort Detrick and the off-site regulated medical waste incinerator, potentially resulting in public exposure to decontaminated RMW. In addition, the No Action alternative would not address the need for guarding against accidents. Therefore, the No Action alternative could result in short-term, moderative, adverse impacts regarding exposure to and transport of hazardous materials.

5.4 Human Health and Safety

5.4.1 Environmental Criteria

The Proposed Action would result in significant adverse impacts to the environment if:

- The Proposed Action resulted in accidents, occupational injuries, or illnesses that impede DoD, and other federal agencies located on Fort Detrick missions, readiness, quality of life, or morale;
- The Proposed Action resulted in an unsafe workplace, equipment, or operations; or
- The Proposed Action resulted in accidents, injuries, or health complications to the public.

5.4.2 Impacts from the Proposed Action

Implementation of the Proposed Action would alleviate the current need for contractor transport of RMW offsite for the distance between Fort Detrick's Area A and the off-site regulated medical waste incinerator through public thoroughfare streets. The off-site transport distance would be greatly decreased between the point of collection and the point of disposal and transport activities would be under the control of Fort Detrick.

In addition, it is anticipated that workers on site would wear appropriate PPE and follow all appropriate and required local, state, and Federal requirements for handling, sampling, and disposing of potentially contaminated soils and/or encountered groundwater during construction activities. Although there is no known contamination present that would impact construction of the proposed project, in the event that contaminated soils and/or groundwater are discovered, encountered and removed soils and groundwater would be stockpiled on liners and/or containerized, as appropriate, for hauling and disposal at a licensed upland facility, in accordance with all applicable local, state, and Federal regulations. In addition, an operations and maintenance plan would be drafted and utilized for safety training of staff working within the proposed facility. No new construction or ground disturbance is proposed to take place on Area B. All existing landfill caps in proximity to the existing active municipal landfill would remain uncompromised

and intact, and no Area B FTD 72/OU-14 groundwater associated with the NPL listing would be encountered as a result of the Proposed Project.

This would, in turn, increase the likelihood of protecting the health and safety of the public, and would have a long-term, moderate-to-significant, beneficial impact to human health and safety.

5.4.3 Impacts from the No Action Alternative

The No Action Alternative would not change the scenario from that which exists currently. Treated RMW would continue to be transported by contractor from Fort Detrick's Area A to an off-site regulated medical waste incinerator. The No Action scenario would not change the potential for accidents during transport of RMW on public thoroughfares for the distance between Fort Detrick and the off-site regulated medical waste incinerator, potentially resulting in public exposure to treated medical research waste. Therefore, the No Action alternative could result in short-term, moderative, adverse impacts regarding human health and safety issues.

5.5 Noise

5.5.1 Environmental Criteria

The Proposed Action would be considered to have a significant effect to noise impacts if:

- It would raise the ambient noise level to such a state that it would be seriously incompatible with adjacent noise receptors;
- It would substantially increase the number of people disturbed by the heightened noise levels on Fort Detrick Area A and Area B and off-post areas.

5.5.2 Impacts from the Proposed Action

Noise impacts from implementation of the Proposed Action would be minor and mitigable. Under the Proposed Action short-term negative effects are expected to occur throughout the construction process. Operation of heavy equipment and machinery as well as increases in construction traffic would result in a temporary increase in noise level in the immediate vicinity of the proposed medical waste incinerator site (Area A). No modifications are proposed for the existing active landfill; therefore, increases in noise levels are not expected at Area B during the construction phase. Noise due to construction activities would vary depending on the construction method, the types of construction equipment employed, the amount of each type of construction equipment, and the duration of construction equipment use. Heavy equipment produces the greatest amount of noise disturbances and should be of special concern. Noise impacts on the health of construction workers would be mitigated by adherence to OSHA standards for occupational noise exposure associated with construction (29 CFR 1926.52). Noise impacts on nearby residents would be mitigated by adherence to the regulatory limit for construction activities of 90 dBA at the boundaries of the site (COMAR 26.02.03.03 A(2)(a); City of Fredrick Ordinance Section 15-21).

Operation of the two new medical incinerator units would generate noise levels in their immediate vicinity. The increase in noise levels would be localized and minimal because the incinerators would be enclosed in a building. In addition, only one of the two new units would be operating at any given time, the other would be a spare. There would be weekly delivery of ash via dump trucks from the incinerator site (Area A) to the active landfill in Area B. Noise impact from the dump trucks would generate some noise; however, the noise would be infrequent (once per week) and similar to existing truck traffic noise at the landfill. Therefore, long-term impacts related to the new incinerator and truck traffic noise are anticipated during the operation phase, but such impacts would be minor.

The potential noise impacts would be mitigated by adherence to design criteria for the proposed HMIWI units to ensure that sound levels as measured in dBA at the boundaries of the study areas do not exceed limitations set forth in Maryland regulations for noise control (COMAR 26.02.03.03) and City of Frederick Ordinance Section 15-21. Mitigation measures may include use of sound-absorbing materials within the proposed HMIWI facility building, avoiding unnecessary idling of trucks at the landfill, and restricting truck traffic to daylight hours when increases in noise levels are more tolerable.

5.5.3 Impacts from the No Action Alternative

No effect on the noise environment would be expected under the No Action Alternative. No construction activities would be undertaken, and thus no changes in operations or increases to overall noise levels would take place.

5.6 Visual Aesthetics

5.6.1 Environmental Criteria

The Proposed Action would be considered to have a significant effect to visual impacts if:

- Long term alteration of the viewshed that would require mitigation would occur;
- Substantial negative alterations to the viewshed of a historical resource would be expected; and
- Not compliant with the overall viewshed of adjacent areas.

5.6.2 Impacts from the Proposed Action

The proposed location for construction of the proposed HMIWI facility is interior to Fort Detrick Area A and surrounded by existing buildings of similar style and nature, including laboratories. It is anticipated that from areas off-post where views of the interior of Area A are obstructed by perimeter fencing and vegetation, the proposed HMIWI facility would not be easily visible. From areas off-post where views of the interior of Area A are not obstructed, it is anticipated that if the proposed HMIWI facility is visible, though it may be distinguishable from other existing buildings

located in its proximity due to its design, it would be at least partially obstructed by the surrounding, existing built environment. Although the design of the facility exterior would reflect that of its operations as an incinerator, it is anticipated that the facility façade would be constructed of materials similar in nature to those of existing surrounding buildings. In addition to the presence of the proposed HMIWI facility, during operations, it is anticipated that emissions from the proposed HMIWI facility's stack(s) would be visible, depending on current meteorological conditions. Although this would constitute a change in aesthetics from the current scenario, it is anticipated that visual impacts associated with stack emissions would be generally similar to those experienced during Fort Detrick's past scenario when the now-permanently offline incinerators were operational.

In Area B, no visual impacts are anticipated as part of the Proposed Action as the existing active municipal landfill is currently in use. Currently, approximately one truck trip per week is made to the Area B landfill to dispose of bulk wastes that cannot be disposed of elsewhere. There may be an addition of an average of one truck trip per week travelling from Area A to Area B for purposes of incinerator ash disposal. This addition, however, would not vary greatly from the current scenario.

Therefore, the Proposed Action would not result in long-term, significant adverse impacts to visual aesthetics.

Short term minor impacts are expected under the Proposed Action during the construction process due to the presence of construction vehicles and materials.

5.6.3 Impacts from No Action Alternative

Under the No Action Alternative, no construction would take place and therefore, there would be no anticipated impacts to visual aesthetics.

5.7 Geology, Soils and Topography

5.7.1 Environmental Criteria

The Proposed Action would be considered to have a significant effect to geology, soils and topography impacts if:

- It causes the substantial loss of soils, or compaction to the extent that makes it impossible to establish native vegetation within two growing seasons;
- It disturbs a land area larger than 1,000 acres;
- It causes a permanent loss of soil productivity that results from converting previous soils into impervious ground on more than 5% of installation land;
- It results in topography that does not comply with the overall topography of adjacent land; and

- It removes or alters soils and causes structural instability to surrounding buildings or infrastructure.

5.7.2 Impacts from the Proposed Action

As there is no construction or land disturbance in the Area B Study Area, impacts to geology, soils, and topography in that study area are not discussed in this section.

The Proposed Action would result in placement of 10,000 square feet of impervious surface over previously disturbed soils for construction of the building that would house the proposed HMIWI units in the Area A Study Area. It is not anticipated that this would cause a substantial loss of soils or compaction. Where soils may be temporarily disturbed during construction for laydown purposes, these areas would be regraded and revegetated upon completion of construction work. Construction of the building housing the proposed HMIWI units would not penetrate the earth to the depth in which a disturbance to local geology would be anticipated. Final site plans would include measures to minimize the total area of land disturbed, prevent soil erosion and sediment runoff on each site, and re-stabilize any temporarily disturbed areas during construction at each site. If disturbance to soils of 5,000 sq ft or more is required, it is anticipated that an MDE-approved erosion and sediment control plan would be prepared pursuant to COMAR 26.17.01.

Minor changes to topography may occur due to grading of the areas surrounding the building but would be minor compared to the overall topography of the Area A Study Area. As a result, no significant adverse impacts to these resources are anticipated from the Proposed Action.

5.7.3 Impacts from the No Action Alternative

As there is no construction or land disturbance in either study area under the No Action Alternative, no significant impacts to these resources would occur under this alternative.

5.8 Water Resources and Water Quality

5.8.1 Surface Water and Groundwater

5.8.1.1 Environmental Criteria

The Proposed Action would be considered to have a significant impact on surface water or groundwater if:

- It could cause an exceedance of a Total Maximum Daily Load;
- It could cause a change in the impairment status of a surface water; or
- It could cause an unpermitted direct impact on a water of the United States.

5.8.1.2 Impacts from the Proposed Action

There are surface waters located and/or mapped along the eastern and western boundaries of the Area A Study Area. As the Proposed Action is located in the north central portion of the study area, all construction and operation work would be removed from the locations of any surface waters. Stormwater runoff during construction would be controlled through use of best management practices and all temporarily disturbed areas would be graded and re-vegetated upon completion of construction, in accordance with a construction general permit for stormwater. An Erosion and Sediment Control Plan (ESCP) would be required, which would include standard erosion and sediment control techniques to protect surface water resources.

Disposal of ash from the proposed HMIWI facility into the existing landfill would occur in accordance with the Refuse Disposal Permit (No. 2015-WMF-0327) issued from the MDE and is not anticipated to contribute any pollutants to the existing surface water and groundwater system. Additionally, transport of the ash to the existing landfill would occur on existing roadways and no construction within surface waters or groundwater would occur. There would be no land disturbance within the Area B Study Area, which would eliminate any potential exposures to construction workers and align with the findings in the Final Area B Groundwater RI Report (December 2019) (USACE, 2019). As a result, it is not anticipated that disposal of ash from the proposed HMIWI facility would cause any adverse impacts to the Area B Study Area.

As such, it is not anticipated that the Proposed Action would cause an impairment of surface waters or groundwater.

5.8.1.3 Impacts from the No Action Alternative

Under the No Action Alternative, no construction or land disturbance would occur. No effect on groundwater or surface waters would be expected as a result of the No Action Alternative.

5.8.2 Floodplains

5.8.2.1 Environmental Criteria

The Proposed Action would be considered a significant adverse impact if it:

- Reduces water availability or supply to existing users;
- Overdrafts groundwater basins;
- Exceeds safe annual yield of water supply sources;
- Threatens or damages unique hydrologic characteristics;
- Endangers public health by creating or worsening health hazard conditions; or
- Violates established laws or regulations adopted to protect floodplains.

5.8.2.2 Impacts of the Proposed Action

EO 11988 directs that any new construction must avoid floodplains as much as possible, and if construction in the floodplain cannot be avoided, flood protection measures must be undertaken to reduce the risk of flood-associated damages.

As there is no construction or land disturbance proposed to support disposal of ash from the proposed new HMIWI facility, impacts to the 100-year floodplain in the Area B Study Area are not discussed in this section. There is only a small portion of the Area A Study Area, located in the northeast corner of the study area that is located within the 100-year floodplain. The proposed HMIWIs are located within the center of the Area A Study Area and therefore, not located within the 100-year floodplain. As such, there would be no impacts to floodplains from the Proposed Action and, therefore, no adverse impacts to water availability, groundwater basins, water supply sources, hydrologic characteristics of the study area, and public health conditions.

5.8.2.3 Impacts from the No Action Alternative

Under the No Action Alternative, there would be no impacts to floodplains as there would be no construction or land disturbance.

5.8.3 Wetlands

5.8.3.1 Environmental Criteria

Significant adverse impacts to wetlands would occur as a result of the Proposed Action if it:

- Fills or alters a portion of wetland that would cause irreversible negative impacts to species or habitats of high concern;
- Irreversibly degrades the quality of a unique or pristine wetland; and
- Results in reductions of population size or distribution of species of high concern.

5.8.3.2 Impacts of the Proposed Action

As discussed in Section 4.8.4 above, there are three NWI-mapped wetlands and five wetland areas delineated during the 2010 PLS in the Area A Study Area. There are six NWI-mapped wetlands and three wetland areas and a drainage ditch delineated during the 2010 PLS in the Area B Study Area. There are no wetland areas mapped or delineated at the site of the existing landfill and as there is no construction or land disturbance proposed to support disposal of ash from the proposed new HMIWI, impacts to wetlands in the Area B Study Area are not discussed in this section.

Mapped and delineated wetlands are located within the northeast portion and along the western edge of the Area A Study Area. As the location of the proposed HMIWI facility is in the north central portion of the Area A Study Area, it is not anticipated that proposed construction work would impact these resources. There are no Federal or State permits anticipated to support the Proposed Action.

5.8.3.3 Impacts from the No Action Alternative

There would be no direct impact on wetlands as a result of the No Action Alternative as no construction would occur.

5.8.4 Water Quality Certification

5.8.4.1 Environmental Criteria

Significant adverse impacts to water quality certifications would occur as a result of the Proposed Action if:

- Compliance with USEPA-approved water quality standards would not be met.

5.8.4.2 Impacts of the Proposed Action

As discussed in Section 5.8.1, there are no impacts expected from the Proposed Action to surface waters and ground water in the Area A and Area B Study Areas. As such, no violations to USEPA-approved water quality standards would occur from the Proposed Action and it is not anticipated that a Water Quality Certification would be required.

5.8.4.3 Impacts of the No Action Alternative

Under the No Action Alternative, there would be no construction or land disturbance, so no permits would be needed, and in turn, no Water Quality Certification would be needed. Therefore, there would be no impacts to USEPA-approved water quality standards from the No Action Alternative.

5.9 Biological Resources

5.9.1 Environmental Criteria

The Proposed Action would be considered to have a significant impact on the biological environment if:

- It could result in a permanent net loss of habitat at a landscape scale;
- It could cause a long-term loss or impairment of a substantial portion of local habitat on which native species depend; or
- It could result in the unpermitted "take" of bald eagles or a threatened or endangered species.

5.9.2 Impacts from the Proposed Action

The Proposed Action would not result in a significant adverse effect to biological resources. As the existing landfill does not require any improvements to support disposal of ash from the proposed new HMIWI and transportation to the existing landfill would utilize an existing roadway, there are no impacts anticipated to biological resources and their habitat in the Area B Study Area.

As there is no land disturbance proposed within the Area B Study Area, there is no anticipated sedimentation or erosion that would impact Carroll Creek and its tributaries, and therefore, there are no anticipated impacts to the state-listed threatened species, pearl dace, and the state highly rare species, checkered sculpin, or any other important aquatic species, that are known to utilize Carroll Creek.

The building that would house the proposed HMIWI units would be built on vacant, previously disturbed land in the Area A Study Area, consisting partially of impervious surface and partially of maintained grass and some overgrown vegetation. It is anticipated that there is limited wildlife within this area and any wildlife that may utilize this area would be able to mobilize to other habitat areas within the study area and the surrounding areas. Construction of the building would result in a permanent loss of any vegetation within the footprint of the building, but given that the building would be located within previously disturbed land and there are no protected species within the Area A Study Area, it is not anticipated that this loss would result in a significant loss of habitat at a landscape scale or cause long-term loss or impairment of habitat that a native species depends on. The proposed location of the proposed HMIWI facility would not be located in the vicinity of Carroll Creek. All appropriate best management practices for sediment and erosion control would be strictly adhered to during land disturbance activities. Given the removed location of the proposed HMIWI facility in relation to Carroll Creek and use of best management practices, it is not anticipated that adverse impacts to the state-listed threatened species, pearl dace, and the state highly rare species, checkered sculpin, or any other important aquatic species in Carroll Creek would occur.

5.9.3 Impacts from the No Action Alternative

Under the No Action Alternative, there would be no disturbances that could impact vegetation or wildlife within the study areas.

5.10 Energy and Utilities

5.10.1 Environmental Criteria

The Proposed Action would result in significant adverse impacts to utilities if:

- It reduces water availability or supply to existing users;
- It overdrafts ground water basins; and
- It exceeds safe annual yield of water or energy supply sources.

5.10.2 Impacts from the Proposed Action

The proposed HMIWI facility would use natural gas as its primary fuel for incineration.. Several existing on-site utilities are located in close proximity to the proposed HMIWI facility location, including sanitary sewer, electric, storm sewer, potable water, natural gas, and data fiber. It is

anticipated that given the close proximity of the existing utility infrastructure near the proposed HMIWI facility location on Area A, extensions of each utility would be made for connection to the proposed HMIWI facility with minimal ground disturbance required. Any required ground disturbance associated with the extension of existing utilities for connection to the proposed HMIWI facility would take place in an area that is comprised of built environment and previously disturbed soils. It is anticipated that an MDE erosion and sediment control permit pursuant to COMAR 26.17.01, an MDE stormwater management permit pursuant to COMAR 26.17.02, and a NPDES permit pursuant to the General Permit for Construction Activities would be required and obtained prior to the start of proposed construction activities. All utilities required for use by the proposed HMIWI facility are in existence on Area A and therefore, no new utilities would be brought on site as part of the Proposed Action. Therefore, no off-site disturbance associated with utilities would be required.

Prior to project implementation, the locations of all existing underground utilities within the project areas would be determined. All utilities would be identified and clearly marked throughout the duration of project activities.

No changes to existing utilities would be required on Area B as a result of the Proposed Action.

The Proposed Action would not increase the long-term demand for public utility services and would not affect regional or local water or energy supplies. Fort Detrick has taken several facilities off-line permanently in recent years which utilized public utilities, including natural gas. Therefore, the addition of a new proposed single facility operating primarily on natural gas would not be expected to increase the overall demand on the utility. No deviation from Fort Detrick's normal stormwater utility management is anticipated as a result of the Proposed Action.

No significant adverse impacts to utilities are anticipated under the Proposed Action.

5.10.3 Impacts from the No Action Alternative

Under the No Action Alternative there would be no significant anticipated effect on utilities. No construction activities would be undertaken, and thus no changes in operations or impacts to existing utilities would take place.

Therefore, the No Action Alternative would result in no impacts to utilities.

5.11 Cultural Resources

5.11.1 Environmental Criteria

Adverse effects on historic properties as a result of the Proposed Action include the following:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous substance remediation, and provision of handicapped access, that

is not consistent with the Secretary's Standards for the Treatment of Historic Properties (36 CFR Part 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property's use or of physical features within its setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features; and
- Transfer, lease, or sale of property out of federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

5.11.2 Impacts from the Proposed Action

In accordance with Section 106 of the NHPA, MHT has been consulted prior to any ground disturbance and/or construction activities associated with the Proposed Action to determine the potential impacts to cultural resources, including historic buildings, districts, and archaeological sites. Through consultation, efforts have been made to avoid, minimize, and mitigate adverse impacts to historic properties. A response from the MHT, dated April 1, 2020, indicated that the MHT has determined that the Proposed Action would have no adverse effect on historic properties.

Excavation and earth moving has the potential to damage known and unknown archeological sites that may be near or underneath the ground surface. In the event that such a site were discovered during implementation of the Proposed Action, Standard Operating Procedures in the installation's ICRMP would be followed to comply with the NHPA. The area surrounding the proposed HMIWI facility location is previously disturbed and currently developed. Cultural resources have not been discovered during the construction of the roadways and buildings located in proximity to the proposed HMIWI facility location, therefore, the proposed project site is not anticipated to contain cultural resources.

5.11.3 Impacts from the No Action Alternative

Under the No Action Alternative, there would be no ground disturbance that could impact archaeological, architectural, or Native American resources; therefore, there would be no impacts to cultural resources.

5.12 Transportation and Traffic

5.12.1 Environmental Criteria

The Proposed Action would result in significant adverse impacts to transportation if it:

- Contributes to a long-term increase in vehicle traffic that could not be accommodated by the existing roadway network; and,
- Results in long term traffic circulation problems within Fort Detrick and off-post.

5.12.2 Impacts from the Proposed Action

Short-term, minor, adverse impacts to transportation and traffic leading up to the access gates would be expected due to the presence of construction vehicles if the Proposed Action were implemented. Temporary increases in traffic congestion would likely occur at access gates during peak construction periods. The Proposed Action would likely temporarily, adversely impact adjacent roads including Amber Road and Navy Way, and access to the parking area adjacent to the proposed project site. No construction of additional access roads would result from the Proposed Action, and only existing roadways would be utilized off-site, and interior to Areas A and B for both construction and operation of the proposed HMIWI facility.

Long-term, negligible or beneficial impacts are anticipated to result from the Proposed Action, as only three to four personnel are expected to be employed full time at the proposed HMIWI facility. A small parking area would be located in close proximity to the proposed HMIWI facility for use only by the proposed HMIWI facility personnel. It is anticipated that there would be weekly delivery of ash via dump trucks from the proposed HMIWI facility site (Area A) to the existing active landfill in Area B. This is a decrease from the current frequency (average approximately 3 times per week) of pickup of treated RMW by the disposal contractor. In addition, the majority of transport of waste resulting from the Proposed Action would take place within the interior of Areas A and B. The off-site transport distance would be greatly decreased between the point of collection and the point of disposal.

5.12.3 Impacts from the No Action Alternative

The implementation of the No Action Alternative would not result in impacts to transportation, traffic, or parking.

5.13 Socioeconomics, Environmental Justice, and Protection of the Children

5.13.1 Environmental Criteria

Significant environmental impacts to Socioeconomics, Environmental Justice and Protection of the Children would occur if:

- It results in a substantially disproportionate share of adverse environmental or social impacts borne by minority or low-income populations;
- Health, safety, social stricture, or economic viability of an environmental justice population are affected;
- Mitigation efforts could not eliminate substantially disproportionate effects to minority or low-income populations; and
- Activities would disproportionately raise risks to children through environmental or health hazards.

5.13.2 Impacts from the Proposed Action

The Proposed Action is expected to result in both minor short term beneficial and negative impacts to socioeconomics. Minor short-term beneficial impacts are expected by the stimulation of the local economy caused by the increase of employment and income generated by the Proposed Action. Temporary adverse impacts to socioeconomics are expected due to the slight increase in noise and traffic. Noise and traffic impacts are expected to be minimal but can cause minor negative impacts due to temporary increased ambient noise levels and traffic congestion. Minor long-term positive impacts can also be expected from the Proposed Action. The Proposed Action would alleviate the need for contractor transport of treated RMW offsite for the distance between Fort Detrick's Area A and the off-site regulated medical waste incinerator through public thoroughfare streets. The off-site transport distance would be greatly decreased between the point of collection and the point of disposal, and transport activities would be under the control of Fort Detrick. This is expected to result in decreased potential for accidental public exposure to treated medical research waste.

An environmental justice analysis determines whether a disproportionate share of adverse environmental or social impacts from implementing a federal action would be borne by minority or low-income populations. The census tracts in which the project areas are located have minority levels of less than 50 percent of the total population of that census tract, with the exception of census tracts 7505.03 and 7505.04, located to the southwest of Area A and to the south of Area B. No project activities associated with the Proposed Action are anticipated to take place within these census tracts. Transportation of ash from the proposed HMIWI facility from Area A to the existing active landfill in Area B would take place along Rosemont Ave and Montevue Lane, which is located in census tract 7512.03, but in close proximity to census tract 7505.04. This route, however, is currently utilized by trucks leaving Area A and travelling to the existing active landfill in Area B, and therefore, the hauling of ash resulting from the Proposed Action would not constitute a substantial change from current activities. Implementation of the Proposed Action would not be expected to adversely impact any demographic group working or living in the economic region of influence. The Proposed Action would not cause changes in population, regional, industrial, or commercial growth.

The Proposed Action would not be expected to impact children's safety, and no adverse effects to children are predicted. All applicable local jurisdictional safety requirements would be implemented during construction activities, to ensure the protection of the public, including children. A Permit to Construct would be required prior to initiation of the Proposed Action. The Permit to Construct application process would include a T-BACT review to ensure that equipment associated with the proposed HMIWI facility would reduce the most toxic air pollution while remaining cost effective. A Permit to Construct would not be issued if the criteria pollutant or toxics analysis fails to demonstrate compliance with regulatory screening levels. As such, it is anticipated that the permitting process would result in assurance of safety and protection of the

public, including children. In addition, proper precautions including the placement of fencing, signage, and other types of barriers would be used to prevent potential harm to all civilians, including children.

5.13.3 Impacts from the No Action Alternative

Under the No Action Alternative, the Proposed Action would not be constructed or operated. Existing conditions would be unchanged, and there would be no impacts to socioeconomics.

5.14 Cumulative Effects

The CEQ regulations (40 CFR 1508.7) require assessment of cumulative impacts in the decision-making process for federal projects.

For the purposes of this EA, cumulative impacts result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable actions, regardless of who undertakes such actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time. Two study areas have been defined for evaluation of potential impacts to human and natural resources within 500 feet of the perimeter boundary of Area A and within 500 feet of the perimeter boundary of Area B, with the modification to incorporate the roadways located to the east of Area B, connecting Areas A and B of Fort Detrick that would be utilized to transport ash resulting from proposed HMIWI facility operations in Area A, to the existing active landfill in Area B. This constitutes the Proposed Action's Region of Influence (ROI) for cumulative effects. This ROI includes areas where the Proposed Action's effects would most likely contribute to cumulative environmental effects.

The Army considered a wide range of past, present, and reasonably foreseeable future actions in the ROI that could contribute to cumulative environmental effects, regardless of the nature of the actions or the Army’s jurisdiction.

Each resource section addresses cumulative effects for each alternative. This analytical approach provides a more complete understanding of resource conditions that the Proposed Action could magnify, amplify, exacerbate, or benefit.

Only “reasonably foreseeable” projects (well-developed, in mature planning stages, and/or with secure funding) are considered in the cumulative impact analysis. "Reasonably foreseeable" is defined as those projects that are well-developed, in mature planning stages, and/or have funding secured. Conceptual projects, broad goals, objectives, or ideas listed in planning documents that do not meet the above criteria are not considered reasonably foreseeable for the purposes of this analysis.

5.14.1 Land Use

The major foreseeable construction at Fort Detrick is outlined in the Area Development Plans for Areas A and B. The Proposed Action contributes in a beneficial way to Fort Detrick's mission by resuming complete control of the medical waste stream from generation to proper treatment and disposal, thereby alleviating the need for contractor-hauling off-site to an incinerator facility located far from the point of waste generation. All activities, including transport are anticipated to be compatible with the existing land uses where activities occur, and therefore, no activities associated with the process of RMW incineration, including transport of ash, would take place within land use areas that are categorized for residential, neighborhood commercial, park, or similarly sensitive land uses. The Proposed Action is in compliance with the ADPs and with the City of Frederick's Zoning requirements. No changes to or incompatibilities with existing land uses are planned due to the Proposed Action; therefore, no cumulative impacts related to land use are anticipated.

5.14.2 Air Quality and Greenhouse Gases

The cumulative impacts on air quality from implementation of the Proposed Action would be minor. Short-term emissions from construction activities would impact air quality temporarily and the impact would cease after construction is completed. In accordance with the CAA, a General Conformity Analysis has been prepared concurrently with this EA and demonstrates that implementation of the Proposed Action would not result in emissions above the thresholds for NOx or VOCs. Estimated operational emissions from the Proposed Action (**Table 5-3**) would increase overall emissions from Fort Detrick to a very small degree, e.g. 0.28 tpy NOx and 0.045 tpy combined HAPs/TAPs. This would contribute minor cumulative impacts to air quality. Air emissions from the proposed HMIWI operations would comply with MDE air quality regulations and permit limits, which are designed to be protective of human health. Because the proposed HMIWIs would employ modern design technology and state-of-the-art emission control technology, operational air emissions from the proposed HMIWI operations would likely decline from past emissions of the prior HMIWI operations.

5.14.3 Hazardous and Toxic Materials, and Solid Wastes

The Proposed Action would not generate additional hazardous, industrial, or possibly radioactive wastes. Ash resulting from the proposed incineration process would be disposed of in the existing active municipal landfill located on Fort Detrick's Area B. The amount of ash landfilled at Area B, however, is anticipated to be minimal and would not cause a significant capacity increase for the landfill in consideration of other, unrelated wastes disposed there. The proposed location for the building that would house the proposed HMIWI units would not be located in an area known for contamination from past projects or past actions at Fort Detrick. As such, it is not anticipated that land disturbance would uncover contamination within the soils during construction of the

building. However, contractual obligations in the construction documents would require contractors to adhere to all applicable local, state, and Federal regulations pertaining to contaminated and hazardous materials, including, but not limited to, those regarding handling, transport, and proper disposal. In the event that hazardous waste dust is produced as byproduct of the incineration process, the dust would be collected, containerized, and hauled off-site to a facility licensed and permitted to accept the waste for disposal. No new construction or ground disturbance is proposed to take place on Area B. All existing landfill caps in proximity to the existing active municipal landfill would remain uncompromised and intact, and no Area B FTD 72/OU-14 groundwater associated with the NPL listing would be encountered as a result of the Proposed Project. It is not anticipated that the Proposed Action would result in a substantial quantity of construction debris or wastes. Contractors, with government oversight and coordination, would be legally responsible for the proper disposal of these wastes in accordance with all federal, state, and Fort Detrick regulations. Because all materials would be handled in accordance with federal and state regulations, the Proposed Action is not anticipated to cause significant adverse impacts to hazardous materials. No foreseeable cumulative impacts to hazardous, toxic, or radioactive substances and/or wastes are anticipated as a result of the Proposed Action.

5.14.4 Human Health and Safety

It is expected that the Proposed Action would have a long-term, moderative, beneficial impact to human health and safety, however, as impacts to health and safety from other foreseeable projects are not readily quantifiable, it is not expected that the Proposed Action would contribute to adverse cumulative impacts to human health and safety.

5.14.5 Noise

The noise resulting from construction equipment is an unavoidable condition. Although construction noise would occur under the Proposed Action, noise would be temporary and cease upon the completion of the project. Therefore, no cumulative impacts related to noise are anticipated during the construction phase.

The Proposed Action would increase overall noise levels at the incineration site in Area A; however, the increase in noise levels would be localized and minimal because the incinerators would be enclosed in a building. The weekly truck delivery of ash from Area A to the existing active landfill in Area B would generate some noise; however, the increase in noise would be localized and minimal. Additionally, the truck traffic would not occur during nighttime. Therefore, long-term cumulative impacts related to the new incinerator and truck traffic noise are anticipated during the operation phase, but such impacts would be minor.

5.14.6 Visual Aesthetics

Short term minor impacts are expected under the Proposed Action during the construction process due to the presence of construction vehicles and materials. After construction, it is anticipated that the proposed incinerator facility would be visible from both inside and outside of Fort Detrick, but with limited visibility due to natural vegetative and other built obstructions from several vantage points. The proposed HMIWI facility is expected to have a façade that is comprised of materials similar in nature to the surrounding built environment. Therefore, with the exception of the incinerator facility stack(s) and their associated visible emissions, the facility itself is expected to visually blend into the surrounding built environment. Although this would constitute a change in aesthetics from the current scenario, it is anticipated that visual impacts associated with stack emissions would be generally similar to those experienced during Fort Detrick's past scenario when the now-offline incinerators were operational. No visual impacts are anticipated in Area B.

The aesthetic setting of the military installation has been altered over the course of Fort Detrick history and would likely continue to change as new military initiatives are carried out within its boundaries. Views of the installation are generally limited to personnel, contractors, resident and visiting families, and civilians working on or visiting the installation, who are cognizant of the missions that occur at or near Fort Detrick, and have become accustomed to scenery characteristic of military installations. Therefore, no cumulative impacts related to visual aesthetics are anticipated.

5.14.7 Geology, Soils and Topography

Past, present, and reasonably foreseeable future projects at Fort Detrick could convert land within and around the Area A and Area B Study Areas from open space to a variety of military uses. As Area A is the largest and most intensively developed parcel in Fort Detrick and already includes a variety of buildings, complexes, and housing units, most of the Area A Study Area has been previously disturbed. Any additional development would likely disturb previously disturbed soils. The proposed location for the building that would house the proposed HMIWI units would not be in an area known for contamination from past projects or past actions at Fort Detrick. As such, it is not anticipated that land disturbance would uncover contamination within the soils during construction of the building. Therefore, it is not anticipated that any cumulative adverse impacts to soils from the Proposed Action would occur. As the Proposed Action does not impact geology or topography, there would be no cumulative adverse impacts to these resources.

5.14.8 Water Resources and Water Quality

Cumulative impacts to surface waters, floodplains, and wetlands are not anticipated as the Proposed Action would have no impacts to these resources. As there is no land disturbance in the Area B Study Area and disposal of ash from the proposed HMIWI facility into the existing landfill would occur in accordance with the MDE Refuse Disposal Permit, there would be no impacts to

groundwater in the Area B Study Area, and therefore, no cumulative impacts to groundwater in the Area B Study Area.

The proposed location for the building that would house the proposed HMIWI units would not be in an area known for contamination from past projects or past actions at Fort Detrick. As such, it is not anticipated that land disturbance would uncover contamination within the groundwater during construction of the building. Upon completion of the construction work, all land disturbance would be graded and vegetated and no impacts to groundwater from operation of the proposed HMIWI facility are anticipated. It is assumed that any present or foreseeable future projects would also utilize best management practices to reduce erosion and siltation from the construction area and minimize impacts to the groundwater system. As a result, it is not anticipated that the Proposed Action would result in cumulative adverse impacts to groundwater in the Area A Study Area.

5.14.9 Biological Resources

As the USFWS only requires evaluation of the northern long-eared bat if 15 acres or more of tree clearing would occur during project construction, the Proposed Action would not adversely impact this species as there is no tree clearing proposed that would contribute to cumulative adverse impacts. As land disturbance from construction of the building that would house the HMIWI units in the Area A Study Area would not be located near Carroll Creek, and best management practices would be implemented to prevent erosion and sedimentation and associated impacts to Carroll Creek, the Proposed Action would not cause cumulative impacts when combined with any past, present, or foreseeable future projects.

Construction of the building that would house the proposed HMIWI units would result in a permanent loss of vegetation within the footprint of the building. As this location, and most of the Area A Study Area, has either been previously disturbed or is already developed, it is not anticipated that the loss of vegetation from the Proposed Action combined with any present or reasonably foreseeable future projects within the Area A Study Area would significantly impact habitat at a landscape scale or cause long-term loss or impairment of habitat that a native species depends on. Therefore, it is not anticipated that the Proposed Action would result in cumulative adverse impacts to vegetation and wildlife within the Area A Study Area.

5.14.10 Energy and Utilities

It is anticipated that given the close proximity of the existing utility infrastructure near the proposed HMIWI facility location on Area A, extensions of each utility would be made for connection to the proposed HMIWI facility with minimal ground disturbance required. Any required ground disturbance associated with the extension of existing utilities for connection to the proposed HMIWI facility would take place in an area that is comprised of built environment and previously disturbed soils. It is anticipated that an MDE erosion and sediment control permit pursuant to COMAR 26.17.01, an MDE stormwater management permit pursuant to COMAR

26.17.02, and a NPDES permit pursuant to the General Permit for Construction Activities would be required and obtained prior to the start of proposed construction activities. All utilities required for use by the proposed HMIWI facility are in existence on Area A and therefore, no new utilities would be brought on site as part of the Proposed Action. Fort Detrick has taken several facilities off-line permanently in recent years which utilized public utilities, including natural gas. Therefore, the addition of a new proposed single facility operating primarily on natural gas would not be expected to increase the overall demand on the utility and therefore, there would be no cumulative impacts. No deviation from Fort Detrick's normal stormwater utility management is anticipated as a result of the Proposed Action. Drinking water would be supplied by the existing Fort Detrick WTP and distribution system and wastewater would be discharged into Fort Detrick's existing sanitary sewer system. Therefore, there are no direct or foreseeable cumulative effects on utilities as a result of the Proposed Action. No deviation from Fort Detrick's normal utility management is anticipated as a result of the Proposed Action.

5.14.11 Cultural Resources

Although cultural resources are known to be located within the Study Areas, it is anticipated that no cultural resources would be impacted as a direct or indirect result of implementation of the Proposed Action.

There are no anticipated direct impacts on cultural resources resulting from the Proposed Action, and consequentially, no foreseeable cumulative effects are expected.

5.14.12 Transportation and Traffic

The temporary traffic increases and increased wear on roadways associated with the Proposed Project are minor and not readily quantifiable. The cumulative effect of the Proposed Project and other projects would be minor-to-moderate increased traffic on local roads during construction. The Proposed Action would contribute to increased cumulative effects regarding the transportation system within Fort Detrick during construction. However, there would be no overall cumulative impacts as a result of the Proposed Action on the larger transportation network.

5.14.13 Socioeconomics, Environmental Justice, and Protection of the Children

Minor short-term impacts are expected by the stimulation of the local economy caused by the increase of employment and income generated by the Proposed Action. Temporary adverse impacts to socioeconomics are expected due to the slight increase in noise and traffic. While the Proposed Action may result in a positive impact as the construction personnel patronize nearby businesses, and a negative impact due to increased noise and traffic, these impacts would be both minor and short term, and would not contribute to an overall cumulative effect of socioeconomic conditions in the area. Minor long-term positive impacts can also be expected from the Proposed Action due to the alleviation of the need for contractor transport of treated RMW outside of the

local area for the distance between Fort Detrick's Area A and the off-site regulated medical waste incinerator through public thoroughfare streets.

6 CONCLUSION

This EA analyzes the potential environmental and social consequences associated with the activities required for the resumption of onsite incineration through the design, construction, and operation of a proposed new HMIWI facility on available, buildable, previously disturbed land in proximity to the contributing research facilities located at Fort Detrick's Area A. The purpose of the Proposed Action is for Fort Detrick to retain control of the decontaminated RMW and to have the capacity to treat and dispose of the RMW on-site, which would benefit the natural and human environment. It includes not only the design and build of the remedy, but the continued operation in accordance with all applicable federal, state, and local laws and regulations. The Proposed Action would also meet the mission requirements at Fort Detrick.

The EA was prepared in accordance with the NEPA and implementing regulations issued by the CEQ and 32 CFR Part 651.

The Proposed Action would result in short term minor impacts to air quality, noise, visual aesthetics, transportation and traffic, and socioeconomics. The Proposed Action would result in long-term minor or negligible impacts to land use, noise, visual aesthetics, geology, soils and topography, transportation and traffic, and socioeconomics. Long term beneficial impacts provided by the Proposed Action would be to land use, hazardous materials, human health and safety, transportation and traffic, and socioeconomics. The Proposed Action Alternative would have no impact on air quality, surface water and groundwater, floodplains, wetlands, Water Quality Certification, biological resources, utilities, and cultural resources.

Under the No Action Alternative, no design or construction activities would occur. The No Action Alternative would potentially result in short or long term moderate adverse impacts to land use, hazardous materials, and human health and safety. The No Action Alternative would have no impact on air quality, noise, visual aesthetics, geology, soils, and topography, surface water and groundwater, floodplains, wetlands, Water Quality Certification, biological resources, utilities, cultural resources, transportation and traffic, and socioeconomics.

Based on the evaluation of environmental effects described in Chapter 5 and summarized in **Table 6-1**, the Proposed Action would not result in a significant impact to the environment. Therefore, an EIS will not be necessary for this Proposed Action. This conclusion is documented in the FNSI found at the beginning of this report.

Table 6-1: Summary of the Effects of the Proposed Action and No Action Alternative

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
Land Use	Moderate, Short or Long-Term Moderate Adverse Short or Long-Term	Negligible or Minor Long-Term Beneficial Long-Term	Land use compatibility and compliance with Fort Detrick's overall Area Development Plan and the City of Frederick's Zoning requirements would be maintained.
Air Quality and Greenhouse Gases	No Impact	Minor, Adverse, Short-Term No Impact	All activities would be required to comply with federal, state, and current Fort Detrick versions of regulations designed to support compliance with CAA, OSHA, and TSCA. Coordination with MDE prior to project initiation would determine the applicability of permits required. The Proposed Action would be initiated only after the environmental review has been completed and the appropriate air permits are acquired. The Proposed Action would require two separate permitting actions with MDE: 1) apply for and obtain an air Permit to Construct and 2) incorporate the new HMIWI and associated compliance requirements into the facility's Title V operating permit with an administrative amendment or consent decree. The permitting process will include MDE regulatory and technical review of the proposed HMIWI and opportunity for EPA and the public to review and comment. The Proposed Action would be subject to 40 CFR Part 60, Subpart Ec (NSPS

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			Subpart Ec), Standards of Performance for New Stationary Sources: Hospital/Medical/Infectious Waste Incinerators, found at 40 CFR §60.50c, et. seq. This rule specifies emission limits for several pollutants and compliance requirements for new HMIWIs including requirements for fugitive fly ash/bottom ash emissions (where applicable), HMIWI operator training and qualification requirements, waste management requirements, and siting requirements. The Permit to Construct application process would include a best available control technology review for toxics known as T-BACT and an ambient impact compliance demonstration. Ultimately, the Proposed Action must demonstrate it meets the T-BACT requirements and the ambient impact criteria before a Permit to Construct can be issued by MDE. Fort Detrick would be required to demonstrate compliance with the NAAQS for the criteria pollutants emitted from the new proposed HMIWI operations. Similarly, the application processes would also require an ambient impact analysis to show that the facility's impact of each TAP is less than the MDE established benchmarks called screening levels that are protective of public health.
Hazardous and Toxic Materials	Moderate, Adverse,	Beneficial, Long-Term	The Proposed Action would not change the quantity of RMW generated at Fort Detrick from the present scenario. The end

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
	Short or Long-Term		user for the proposed HMIWI facility would be U.S. Army Garrison at Fort Detrick. The incinerator would support the hazardous medical waste requirements from the medical research laboratories and medical/dental treatment facilities at Fort Detrick. The Proposed Action would ensure that all activities associated with Fort Detrick's RMW, from generation through treatment and disposal, would take place on-site, except for transportation of incinerator ash from Area A to Area B's landfill. The distance travelled from the perimeter gate on Area A to the perimeter gate on Area B is much less than the distance currently travelled from the perimeter gate on Area A to an off-site regulated medical waste incinerator, and therefore, the length of exposure to off-site resources would be greatly reduced, and all wastes would remain under Fort Detrick's control. Contractual obligations in the construction documents would require contractors to adhere to all applicable local, state and Federal regulations pertaining to contaminated and hazardous materials and wastes, including, but not limited to, those regarding handling, transport, and proper disposal. In the event that hazardous waste dust is produced as byproduct of the incineration process, the dust would be collected, containerized, and hauled off-site to a

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			facility licensed and permitted to accept the waste for disposal. Incinerator ash would be landfilled in the existing active municipal landfill located on Area B, in accordance with the current State of Maryland Refuse Disposal Permit No. 2015-WMF-0327. All existing landfill caps in proximity to the existing active municipal landfill would remain uncompromised and intact, and no Area B (FTD 72/OU-14) groundwater associated with the NPL listing would be encountered as a result of the Proposed Project. Contractors, with government oversight and coordination, would be legally responsible for the proper disposal of construction debris or wastes in accordance with all federal, state and Fort Detrick regulations. Therefore, it is not anticipated that the Proposed Action would cause significant adverse impacts to hazardous wastes, and instead, it is anticipated that the Proposed Action would have moderate, long-term beneficial impacts to hazardous wastes. The active municipal waste landfill located on Area B is licensed and permitted to accept the ash that would result from the proposed incineration process and has adequate capacity to do so. All ash resulting from the incineration process would be rendered non-hazardous from the incineration process itself.

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			No significant adverse impacts are anticipated to the IRP sites under the Proposed Action. A discovery of a previous contamination would have to be added to the IRP and could be subject to the CERCLA process. Based on investigations completed to date, there is no evidence of past environmental contamination that would impact the construction of the proposed project.
Human Health and Safety	Moderate, Adverse, Short or Long-Term,	Long-Term Beneficial	In addition, it is anticipated that workers on site would wear appropriate PPE and follow all appropriate and required local, state, and Federal requirements for handling, sampling, and disposing of potentially contaminated soils and/or encountered groundwater during construction activities. Although there is no known contamination present that would impact construction of the proposed project, in the event that contaminated soils and/or groundwater are discovered, encountered and removed soils and groundwater would be stockpiled on liners and/or containerized, as appropriate, for hauling and disposal at a licensed upland facility, in accordance with all applicable local, state, and Federal regulations. In addition, an operations and maintenance plan would be drafted and utilized for safety training of staff working within the proposed facility.
Noise	No Impact	Minor, Short-Term	Noise impacts on the health of construction workers would be mitigated by adherence to OSHA standards for

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
		Negligible or Minor, Long-Term	occupational noise exposure associated with construction (29 CFR 1926.52). Noise impacts on nearby residents would be mitigated by adherence to the regulatory limit for construction activities of 90 dBA at the boundaries of the site (COMAR 26.02.03.03 A(2)(a); City of Fredrick Ordinance Section 15-21). The potential noise impacts would be mitigated by adherence to design criteria for the proposed HMIWI units to ensure that sound levels as measured in dBA at the boundaries of the study areas do not exceed limitations set forth in Maryland regulations for noise control (COMAR 26.02.03.03) and City of Frederick Ordinance Section 15-21. Mitigation measures may include use of sound-absorbing materials within the proposed HMIWI facility building, avoiding unnecessary idling of trucks at the landfill, and restricting truck traffic to daylight hours when increases in noise levels are more tolerable.
Visual Aesthetics	No Impact	Minor, Short-Term Negligible or Minor, Long-Term	The proposed location for construction of the proposed HMIWI facility is interior to Fort Detrick Area A and surrounded by existing buildings of similar style and nature, including laboratories. It is anticipated that from areas off-post where views of the interior of Area A are obstructed by perimeter fencing and vegetation, the proposed HMIWI facility would not be easily visible. From areas off-post where views of the interior of

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			Area A are not obstructed, it is anticipated that if the proposed HMIWI facility is visible, though it may be distinguishable from other existing buildings located in its proximity due to its design, it would be at least partially obstructed by the surrounding existing built environment. Although the design of the facility exterior would reflect that of its operations as an incinerator, it is anticipated that the facility façade would be constructed of materials similar in nature to those of existing surrounding buildings.
Geology, Soils, and Topography	No Impact	Minor, Short-Term Minor or Negligible, Adverse, Long-Term;	Where soils may be temporarily disturbed during construction for laydown purposes, these areas would be regraded and revegetated upon completion of construction work. Construction of the building housing the proposed HMIWI units would not penetrate the earth to the depth in which a disturbance to local geology would be anticipated. Final site plans would include measures to minimize the total area of land disturbed, prevent soil erosion and sediment runoff on each site, and re-stabilize any temporarily disturbed areas during construction at each site. If disturbance to soils of 5,000 sq ft or more is required, it is anticipated that an MDE-approved erosion and sediment control plan would be prepared pursuant to COMAR 26.17.01.

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
Water Resources (Surface Water and Groundwater)	No Impact	No Impact	Disposal of ash from the proposed HMIWI facility into the existing landfill would occur in accordance with the Refuse Disposal Permit (No. 2015-WMF-0327) issued from the MDE and is not anticipated to contribute any pollutants to the existing surface water and groundwater system. Stormwater runoff during construction would be controlled through use of best management practices and all temporarily disturbed areas would be graded and re-vegetated upon completion of construction, in accordance with a construction general permit for stormwater. An ESCP would be required, which would include standard erosion and sediment control techniques to protect surface water resources.
Floodplains	No Impact	No Impact	EO 11988 directs that any new construction must avoid floodplains as much as possible, and if construction in the floodplain cannot be avoided, flood protection measures must be undertaken to reduce the risk of flood-associated damages. As there is no construction or land disturbance proposed to support disposal of ash from the proposed new HMIWI facility, impacts to the 100-year floodplain in the Area B Study Area are not discussed in this section. There is only a small portion of the Area A Study Area, located

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			in the northeast corner of the study area that is located within the 100-year floodplain. The proposed HMIWIs are located within the center of the Area A Study Area and therefore, not located within the 100-year floodplain.
Wetlands	No Impact	No Impact	Mapped and delineated wetlands are located within the northeast portion and along the western edge of the Area A Study Area. As the location of the proposed HMIWI facility is in the north central portion of the Area A Study Area, it is not anticipated that proposed construction work would impact these resources. There are no wetland areas mapped or delineated at the site of the existing landfill and as there is no construction or land disturbance proposed to support disposal of ash from the proposed new HMIWI, impacts to wetlands in the Area B Study Area. There are no Federal or State permits anticipated to support the Proposed Action.
Water Quality Certification	No Impact	No Impact	There are no impacts expected from the Proposed Action to surface waters and ground water in the Area A and Area B Study Areas. As such, no violations to USEPA-approved water quality standards would occur from the Proposed Action and it is not anticipated that a Water Quality Certification would be required.
Biological Resources	No Impact	No Impact	The building that would house the proposed HMIWI units would be built on

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			vacant, previously disturbed land in the Area A Study Area, consisting partially of impervious surface and partially of maintained grass and some overgrown vegetation. It is anticipated that there is limited wildlife within this area and any wildlife that may utilize this area would be able to mobilize to other habitat areas within the study area and the surrounding areas. Construction of the building would result in a permanent loss of any vegetation within the footprint of the building, but given that the building would be located within previously disturbed land and there are no protected species within the Area A Study Area, it is not anticipated that this loss would result in a significant loss of habitat at a landscape scale or cause long-term loss or impairment of habitat that a native species depends on. Projects with a federal nexus that have tree clearing equal to or greater than 15 acres require further consideration and consultation with the USFWS under Section 7 of the ESA and evaluation under the Northern Long-Eared Bat Consultation and Section 4(d) Rule Consistency Key. For the purposes of this document, it is assumed that less than 15 acres of trees would be cleared as a result of the Proposed Action and, therefore, northern long-eared bat has not been evaluated

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			under the Section 4(d) Rule for potential impacts from the Proposed Action. The proposed location of the proposed HMIWI facility would not be located in the vicinity of Carroll Creek. All appropriate best management practices for sediment and erosion control would be strictly adhered to during land disturbance activities. Given the removed location of the proposed HMIWI facility in relation to Carroll Creek and use of best management practices, it is not anticipated that adverse impacts to the state-listed threatened species, pearl dace, and the state highly rare species, checkered sculpin, or any other important aquatic species in Carroll Creek would occur. As the existing landfill does not require any improvements to support disposal of ash from the proposed new HMIWI and transportation to the existing landfill would utilize an existing roadway, there are no impacts anticipated to biological resources and their habitat in the Area B Study Area.
Energy and Utilities	No Impact	No Impact	Any required ground disturbance associated with the extension of existing utilities for connection to the proposed HMIWI facility would take place in an area that is comprised of built environment and previously disturbed soils. It is anticipated that an MDE erosion and sediment control permit pursuant to COMAR 26.17.01, an MDE stormwater management permit pursuant to COMAR

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			26.17.02, and a NPDES permit pursuant to the General Permit for Construction Activities would be required and obtained prior to the start of proposed construction activities. All utilities required for use by the proposed HMIWI facility are in existence on Area A and therefore, no new utilities would be brought on site as part of the Proposed Action. Therefore, no off-site disturbance associated with utilities would be required. Prior to project implementation, the locations of all existing underground utilities within the project areas would be determined. All utilities would be identified and clearly marked throughout the duration of project activities. No changes to existing utilities would be required on Area B as a result of the Proposed Action.
Cultural Resources	No Impact	No Impact	In accordance with Section 106 of the NHPA, MHT has been consulted prior to any ground disturbance and/or construction activities associated with the Proposed Action to determine the potential impacts to cultural resources, including historic buildings, districts, and archaeological sites. Through consultation, efforts have been made to avoid, minimize, and mitigate adverse impacts to historic properties. A response from the MHT, dated April 1, 2020, indicated that the

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			MHT has determined that the Proposed Action would have no adverse effect on historic properties. The area surrounding the proposed HMIWI facility location is previously disturbed and currently developed. Cultural resources have not been discovered during the construction of the roadways and buildings located in proximity to the proposed HMIWI facility location, therefore, the proposed project site is not anticipated to contain cultural resources. Excavation and earth moving has the potential to damage known and unknown archeological sites that may be near or underneath the ground surface. In the event that such a site were discovered during implementation of the Proposed Action, Standard Operating Procedures in the installation's ICRMP would be followed to comply with the NHPA.
Transportation and Traffic	No Impact	Minor, Adverse, Short-Term Negligible or Beneficial, Long-Term	No construction of additional access roads would result from the Proposed Action, and only existing roadways would be utilized off-site, and interior to Areas A and B for both construction and operation of the proposed HMIWI facility. There would be a decrease from the current frequency (average approximately 3 times per week) of pickup of treated RMW by the disposal contractor. In addition, the majority of transport of waste

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			resulting from the Proposed Action would take place within the interior of Areas A and B. The off-site transport distance would be greatly decreased between the point of collection and the point of disposal.
Socioeconomics, Environmental Justice, and Protection of Children	No Impact	Minor or Negligible, Beneficial Short-Term Short-Term, Adverse Beneficial Long-Term	The off-site transport distance of RMW would be greatly decreased between the point of collection and the point of disposal, and transport activities would be under the control of Fort Detrick. This is expected to result in decreased potential for accidental public exposure to treated medical research waste. All applicable local jurisdictional safety requirements would be implemented during construction of shoreline stabilization measures, to ensure the protection of the public, including children. A Permit to Construct would be required prior to initiation of the Proposed Action. The Permit to Construct application process would include a T-BACT review to ensure that equipment associated with the proposed HMIWI facility would reduce the most toxic air pollution while remaining cost effective. A Permit to Construct would not be issued if the criteria pollutant or toxics analysis fails to demonstrate compliance with regulatory screening levels. As such, it is anticipated that the permitting process would result in

Resource Area	No Action	Proposed Action	Permits, Plans, and Measures Identified for Reduction of Impacts
			assurance of safety and protection of the public, including children. Proper precautions including the placement of fencing, signage, and other types of barriers would be used to prevent potential harm to all civilians, including children.

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8 ACRONYMS AND ABBREVIATIONS

AC	alternating current
ADP	Area Development Plan
AFMIC	Armed Forces Medical Intelligence Center
AFMLOU.S.	Air Force Medical Logistics Office
AIRFA	American Indian Religious Freedom Act of 1987
AOC	Area of Concern
AR	Army Regulation
ARPA	Archaeological Resources Protection Act
ASTs	above ground storage tanks
BBC	Balfour Beatty Communities
BMBL	Biosafety in Microbiological and Biomedical Laboratories
BSL	Biosafety Level
BW	biological warfare
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH4	methane
CO	carbon monoxide
CO2	carbon dioxide
CO2e	CO2 equivalent
COCs	Constituents of Concern
COMAR	Code of Maryland Regulations
COPCs	Constituents of Potential Concern
CUP	Central Utility Plant
CWA	Clean Water Act

CWS	Community Water Systems
CZMA	Coastal Zone Management Act
DA	Department of the Army
dB	decibels
dBA	A-weighted decibels
DeCA	Defense Commissary Agency
DERP	Defense Environmental Restoration Program
DLA	Defense Logistics Agency
DoD	Department of Defense
DOT	Department of Transportation
DUSWM	Division of Utilities and Solid Waste Management
EA	Environmental Assessment
EIS	Environmental Impact Statement
ENR	Enhanced Nutrient Removal
EO	Executive Order
EPA ID	EPA Identification
EPF	Energy Production Facility
ESA	Endangered Species Act
ESCP	Erosion and Sediment Control Plan
EUL	Enhanced Use Leasing
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FNSI	Finding of No Significant Impact
FY	Fiscal Year
GHGs	Greenhouse Gases
GWP	global warming potential
HAP	hazardous air pollutant
HHRA	Human Health Risk Assessment

HMIWI	Hospital/Medical/Infectious Waste Incinerators
HMMO	Hazardous Materials Management Operation
HMMP	Hazardous Materials Management Policy
IAP	Installation Action Plan
ICRMP	Integrated Cultural Resources Management Plan
IDG	Installation Design Guide
IGSA	Intergovernmental Support Agreement
IMCOM	Installation Management Command
IRP	Installation Restoration Program
JMLFDC	Joint Medical Logistics Functional Development Center
JRCAB	Joint Readiness Clinical Advisory Board
LARF	Large Animal Research Facility
LID	low impact development
LUC	Land Use Controls
MACT	Maximum Achievable Control Technology
MC4	Medical Communications for Combat Casualty Care
MDNR	Maryland Department of Natural Resources
mg/L	milligrams per liter
MLMC	Medical Logistics Management Center
MEDCOM	U.S. Army Medical Command
MDE	Maryland Department of the Environment
MHT	Maryland Historic Trust
MSW	municipal solid waste
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NAGRPA	Native American Graves Protection and Repatriation Act of 1979
NCA	Noise Control Act
NCI	National Cancer Institute

NCI-Frederick	National Cancer Institute at Frederick
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NIBC	National Interagency Biodefense Campus
NMLC	U.S. Naval Medical Logistics Command
NOx	Nitrogen oxides
NOI	Notice of Intent
NPL	National Priorities List
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NWI	National Wetlands Inventory
O3	ozone
OEI	Office of Energy Initiatives
OSC	Operational Services Command
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PCE	perchloroethylene
PLS	Planning Level Survey
PM2.5	particulate matter less than 2.5 microns
PM_{10}	particulate matter less than 10 microns
PPA	Power Purchase Agreement
ppb	parts per billion
ppm	parts per million
PSD	Prevention of Significant Deterioration
RA	Remedial Action
RCI	Residential Communities Initiative
RCRA	Resource Conservation and Recovery Act
RDT&E	Research, Development, Testing, and Evaluation

REC	Record of Environmental Consideration
RI	remedial investigation
RMW	regulated medical research waste
ROI	Region of Influence
SAIC	Science Applications International Corporation
SAPs	Satellite Accumulation Points
SARA	Superfund Amendments and Reauthorization Act
SATCON	1st Satellite Control
SCC	social cost of carbon
SIMP	Stormwater Institutional Management Plan
SIP	State Implementation Plan
SOx	sulfur oxides
SO2	sulfur dioxide
SVOCs	Semi-volatile Organic Compounds
SWMP	Solid Waste Management Plan
T-BACT	Best Available Control Technology for Toxics
TAO	Technology Applications Office
TAP	Toxic Air Pollutant
TCE	trichloroethylene
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, and Disposal Facility
USAG	US Army Garrison
USAMISSA	U.S. Army Medical Information Systems and Services
USAMMA	U.S. Army Medical Materiel Agency
USAMMDA	U.S. Army Medical Materiel Development Activity
USAMRAA	U.S. Army Medical Research Acquisition Activity
USAMRDC	U.S. Army Medical Research and Development Command
USAMRIID	U.S. Army Medical Research Institute of Infectious Diseases

USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USTs	underground storage tanks
VOC	volatile organic compound
WAR-MED PSO	Wartime Medical Planning System Office
WDA	Western Disposal Area
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

APPENDIX A

Agency Coordination

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
Phone: (410) 573-4599 Fax: (410) 266-9127
http://www.fws.gov/chesapeakebay/
http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html

In Reply Refer To: February 20, 2020
Consultation Code: 05E2CB00-2020-SLI-0630
Event Code: 05E2CB00-2020-E-01635
Project Name: Medical Waste Incineration Options Environmental Assessment, Fort Detrick, Maryland

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

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

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

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

species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

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

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

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Wetlands

Official Species List

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

This species list is provided by:

Chesapeake Bay Ecological Services Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401-7307
(410) 573-4599

Project Summary

Consultation Code: 05E2CB00-2020-SLI-0630

Event Code: 05E2CB00-2020-E-01635

Project Name: Medical Waste Incineration Options Environmental Assessment, Fort Detrick, Maryland

Project Type: ** OTHER **

Project Description: Fort Detrick is preparing an Environmental Assessment (EA) to evaluate potential environmental, cultural, and socioeconomic effects associated with on-post incineration of medical waste generated at Fort Detrick.

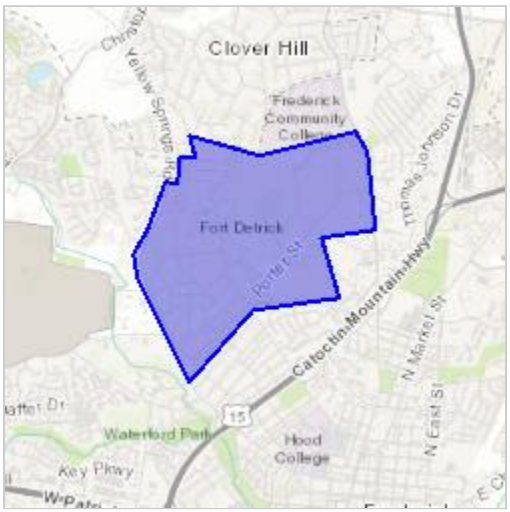
Two years ago, Fort Detrick was operated two on-site hospital/medical/ infectious waste incinerators (HMIWI). The Garrison Commander at that time halted operations of the incinerators to ensure Fort Detrick met regulatory compliance. Fort Detrick implemented its contingency plan and currently transports generated medical waste to an off-site, privately owned incineration facility that complies with regulatory requirements to ensure proper disposal of medical and lab waste. The resumption of on-site disposal operations would allow Fort Detrick to retain full control of the waste disposal process from generation through proper disposal.

The resumption of on-post incineration alternative for treatment and disposal of medical and lab waste will be evaluated within the EA document and will include the construction and operation of a new HMIWI facility. The new HMIWI facility would be appropriately sized and have two HMIWI units to treat regulated medical research waste generated at Fort Detrick. The preferred location for the new incinerator facility is in Area A on available, buildable space in proximity to contributing research facilities. The existing solid waste landfill at Fort Detrick’s Area B would be utilized for disposal of incineration ash. No new construction or ground disturbance would take place in Area B.

Fort Detrick commissioned an EA, pursuant to the National Environmental Policy Act (NEPA) and 32 CFR Part 651, Environmental Analysis of Army Actions to evaluate the effects associated with resuming on-post incineration of medical waste disposal operations. NEPA requires all federal agencies to consider the impact of their proposed actions on the environment, in compliance with regulations implementing the NEPA as promulgated by the Council on Environmental Quality (CEQ; 40 CFR Parts 1500 to 1508).

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/39.43916150393153N77.42713405643589W



Counties: Frederick, MD

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 1 of these species should be considered only under certain conditions.

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

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

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

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis*	Threatened

No critical habitat has been designated for this species.

This species only needs to be considered under the following conditions:

- Projects with a federal nexus that have tree clearing = to or > 15 acres: 1. REQUEST A SPECIES LIST 2. NEXT STEP: EVALUATE DETERMINATION KEYS 3. SELECT EVALUATE under the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule Consistency key

Species profile: https://ecos.fws.gov/ecp/species/9045

Critical habitats

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

USFWS National Wildlife Refuge Lands And Fish Hatcheries

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

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

Wetlands

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER POND

- PUBHh

RIVERINE

- R5UBH
- R2UBH

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor
Jeannie Haddaway-Riccio, Secretary

April 2, 2020

Ms. Heather Cisar
U.S. Army Corps of Engineers
Baltimore District Planning - ISB, 10-B-03
2 Hopkins Plaza
Baltimore, MD 21201

RE: Environmental Review for Medical Waste Incineration Options, Fort Detrick, Frederick County, Maryland.

Dear Ms. Cisar:

The Wildlife and Heritage Service has determined that the project site shown as Area B on your map overlaps with part of Carroll Creek, which is known to support the state-listed threatened Pearl Dace (*Margariscus margarita*) and the state highly rare Checkered Sculpin (*Cottus* sp. 7). We would encourage the applicant to adhere stringently to all appropriate best management practices for sediment and erosion control during any ground disturbance proposed for Area B, in order to reduce the likelihood of adverse impacts to these rare fish species, and to other important aquatic species in Carroll Creek.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2020.0453.fr

20200010

DEPARTMENT OF THE ARMY
U.S. ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON, FORT DETRICK
810 SCHREIDER STREET, SUITE 212
FORT DETRICK, MARYLAND 21702-5000

F
Army
DLH

December 20, 2019

SUBJECT: National Environmental Policy Act Medical Waste Disposal Options Environmental Assessment, Fort Detrick, Maryland

FR Co.

Ms. Elizabeth Hughes, Director
Maryland Historical Trust
100 Community Place
Crownsville, MD 21032-2023

The Maryland Historical Trust has determined that this undertaking will have no adverse effect on historic properties.
Date 4/1/2020

Dear Ms. Hughes:

Fort Detrick is preparing an Environmental Assessment to evaluate potential environmental, cultural, and socioeconomic effects associated with on-post incineration of medical waste generated at Fort Detrick.

Two years ago, Fort Detrick was operating two on-site hospital/medical/infectious waste incinerators. The Garrison Commander halted operations of the on-site incinerators to ensure Fort Detrick met regulatory compliance. Fort Detrick implemented its contingency plan and currently transports generated medical waste to an off-site, privately owned incineration facility that complies with regulatory requirements to ensure proper disposal of medical and lab waste. The resumption of on-site disposal operations would allow Fort Detrick to retain full control of the waste disposal process from generation through proper disposal.

An Environmental Assessment has been commissioned by the U.S. Army Fort Detrick, Frederick County, Maryland, pursuant to National Environmental Policy Act and 32 CFR Part 651, Environmental Analysis of Army Actions to evaluate the effects associated with on-post incineration of medical waste disposal operations. The National Environmental Policy Act requires all federal agencies to consider the impact of their proposed actions on the environment, in compliance with regulations implementing National Environmental Policy Act as promulgated by the Council on Environmental Quality (CEQ; 40 Code of Federal Regulations [CFR] Parts 1500 to 1508).

Fort Detrick will publish a Public Notice in the Frederick News Post on January 10, 2020 inviting stakeholders to attend a local Public Sensing Meeting (location to be determined). The public meeting will take place during the week of January 20, 2020. The purpose of the Public Sensing Meeting is to inform stakeholders of the courses of action to resume incineration of medical waste at Fort Detrick and to solicit concerns that the Environmental Assessment should take into consideration. The Environmental

1/10/20
F-3-161
4/1/20 #460: 20200056 2nd

Assessment process requires a 30-day public review period and public meeting to solicit comments on the draft Environmental Assessment.

Fort Detrick is distributing this communication to organizations and individuals known to have an interest in this project (enclosure). Please bring this matter to the attention of any other stakeholders with an interest in this matter.

Sincerely,

Dexter Nunnally
Colonel, U.S. Army
Commanding

Enclosure

APPENDIX B

General Conformity – Record of Non-Applicability

GENERAL CONFORMITY – RECORD OF NON-APPLICABILITY

Project/Action Name:	**U. S. Army Garrison Fort Detrick – Medical Waste Incineration Options**
Project/Action Point of Contact:	**Randy Weishaar**
Begin Date (Anticipated): xxxxxxx	**End Date (Anticipated):** xxxxxx

General Conformity under the Clean Air Act, Section 176 has been evaluated for the project described above according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this project/action because the total project emissions in tons per year (tpy) of pollutants, for which the project area is in nonattainment or maintenance of National Ambient Air Quality Standards, have been estimated to be:

Total Project Emissions

Volatile Organic Compounds (VOC)	4.9 tpy
Nitrogen Oxides (NO_x)	46.5 tpy

Conformity Threshold Rate

VOC	50 tpy
NO_x	100 tpy

Supporting documentation and emissions estimates are attached.

SIGNED _____

Rhonda Brown Wolf

Air Program Manager

SUPPORTING DOCUMENTATION

Description of Project/Action:

The Proposed Action will consist of building a new incinerator facility at a new location. The Proposed Action is summarized in Table 1 below.

Table 1 – Medical Waste Incineration Options

Project	Description	Proposed Action Impacts	Air Impacts From
1	Build a new incinerator facility	Design and build a new HMIWI facility on available, buildable, previously disturbed land in proximity to the contributing research facilities. The new HMIWI facility would be approximately 10,000 sq. ft. and have two HMIWI units that would meet all applicable installation, local, state, and federal regulations, and would be used to treat all regulated medical research waste generated at Fort Detrick. This project includes building information systems, fire protection and alarm systems, Intrusion Detection System installation, and energy monitoring control systems connections.	Construction Equipment Surface Disturbance Vehicle Transport

Air Emission Input Parameters and Assumptions:

A construction schedule has not yet been finalized; however, anticipated project emissions have been conservatively estimated over a worst-case year (Table 2). Based on information available at the time of this RONA, it is important to note that projected changes are re-evaluated on a continuing basis. Best engineering judgment has been applied to quantify the emissions inventory for combustion equipment types, quantity, size, usage, and emission factors. The same engineering judgment was applied to all other project-specific parameters for input parameters not otherwise defined in the current Proposed Action plan.

Project Duration

The Proposed Action is expected to operate for one year. Construction crews and equipment operations were estimated to be active 260 days a year and emissions were calculated for the worst-case annual emissions.

Nonroad Construction and Demolition Emissions

The nonroad combustion equipment inventory includes a variety of combustion equipment as predicted may be operated under the Proposed Action activities. Table 3 lists anticipated nonroad equipment types, operation conditions, and emission factors. Nonroad equipment emission factors were based on the Sacramento Metropolitan Air Quality Management District, Road Construction Emissions Model, Version 8.1.0. It is anticipated that the total operating hours per year for any of the listed equipment will not exceed the estimated hours for the Proposed Action.

Vehicular Transport Emissions

The vehicular transport fleet includes 5 passenger gasoline vehicles, 10 gasoline pickup trucks, and 5 heavy duty diesel trucks each travelling approximately 200 miles per day for 260 days a year. Emission calculations for the annual vehicular fleet operations are in Table 4. It is anticipated that the total annual vehicle miles traveled for any vehicle type will not exceed the estimated mileages for the Proposed Action.

Wind Erosion for Disturbed Areas

The area of disturbed land is conservatively anticipated to be up to about two acres. Emissions were estimated based on AP-42 Chapter 11.9 for Western Surface Coal Mining from wind erosion and maintenance operations (Table 5). The potential for wind erosion emissions were estimated to be 0.76 tpy of Total Suspended Particulates (TSP), 0.38 tpy for $PM_{10,}$ and 0.06 tpy for $PM_{2.5.}$

Ongoing Operation Emissions and Assumptions

Once the construction, demolition and improvement activities are complete, the Proposed Action construction emissions will cease. There will be emissions from operation of the new incinerators. These activities will be regulated under Fort Detrick's Title V air operating permit.

Air Quality Impact Results:

The Proposed Action is in Frederick County and is within the Central Maryland Intrastate Air Quality Control Region which is also within an ozone transport area. The general conformity requirements and thresholds only apply to criteria pollutants that are in nonattainment or maintenance of the NAAQS. Therefore, *de minimis* levels for the project area are 100 tpy for NO_X and 50 tpy for VOCs as established for nonattainment areas located in an ozone transport area. For those pollutants in attainment, the New Source Review (NSR) thresholds are 250 tons per year. For planning purposes, these thresholds are used in the absence of applicable *de minimis* thresholds.

Air Quality Impact Results for the Worst-Case Annual Proposed Action Emissions

Table 2: Summary of Annual Proposed Action Emissions

Estimated Emissions	**Emissions (tons/year)**					
	VOC	**CO**	**NO_X**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Proposed Action Emissions	4.9	37.0	46.5	0.071	2.66	2.18
de minimis/New Source Review threshold	50	100	100	250	250	250
Exceeds *de minimis* or NSR threshold?	No	No	No	No	No	No

Table 3: Combustion Emissions for NONROAD Equipment

Equipment Type	Estimated NONROAD Inventory					Emission Factor (grams/hp/hour)[1]									Annual Emissions (tons/year)[2]								
	No. Units	HP	hour/ day	day/ year	hour /year	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	VOC	CO	NO_X	SO_2	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O
Air Compressors	2	120	8	260	4,160	0.49	3.70	3.40	0.01	0.22	0.22	568.30	0.04	0.004	0.27	2.03	1.87	3.3E-03	0.12	0.12	313	2.42E-02	2.35E-03
Cement and Mortar Mixers	2	25	8	260	4,160	0.72	2.40	4.44	0.01	0.19	0.19	568.30	0.07	0.005	0.08	0.27	0.51	8.0E-04	0.02	0.02	65	7.45E-03	5.45E-04
Concrete/Industrial Saws	2	50	8	260	4,160	0.80	4.55	4.20	0.01	0.21	0.21	568.30	0.07	0.005	0.18	1.04	0.96	1.6E-03	0.05	0.05	130	1.65E-02	1.09E-03
Cranes	2	250	8	260	4,160	0.38	1.79	4.56	0.00	0.19	0.17	472.95	0.15	0.004	0.44	2.05	5.24	5.6E-03	0.22	0.20	542	1.75E-01	4.90E-03
Crawler Tractors	2	250	8	260	4,160	0.36	1.55	4.63	0.00	0.17	0.16	472.94	0.15	0.004	0.41	1.78	5.32	5.6E-03	0.20	0.18	542	1.75E-01	4.90E-03
Crushing/Proc. Equipment	1	175	8	260	2,080	0.37	3.23	2.39	0.01	0.12	0.12	568.30	0.03	0.004	0.15	1.30	0.96	2.4E-03	0.05	0.05	228	1.32E-02	1.71E-03
Excavators	1	750	8	260	2,080	0.17	1.15	1.80	0.00	0.06	0.06	468.87	0.15	0.004	0.29	1.97	3.09	8.3E-03	0.11	0.10	806	2.61E-01	7.35E-03
Forklifts	2	120	8	260	4,160	0.46	3.76	4.13	0.00	0.31	0.28	471.53	0.15	0.004	0.25	2.07	2.28	2.7E-03	0.17	0.16	259	8.39E-02	2.35E-03
Generator Sets	2	120	8	260	4,160	0.36	3.38	3.17	0.01	0.18	0.18	568.30	0.03	0.004	0.20	1.86	1.75	3.3E-03	0.10	0.10	313	1.76E-02	2.35E-03
Graders	2	175	8	260	4,160	0.57	3.62	5.53	0.00	0.31	0.28	478.04	0.15	0.004	0.45	2.91	4.44	3.9E-03	0.25	0.23	384	1.24E-01	3.43E-03
Other Construction Equipment	2	175	8	260	4,160	0.39	3.24	4.11	0.00	0.22	0.20	469.98	0.15	0.004	0.31	2.60	3.30	3.9E-03	0.17	0.16	377	1.22E-01	3.43E-03
Other Material Handling Equipment	2	175	8	260	4,160	0.25	3.17	2.37	0.00	0.12	0.11	472.22	0.15	0.004	0.20	2.54	1.90	3.9E-03	0.09	0.09	379	1.23E-01	3.43E-03
Plate Compactors	1	15	8	260	2,080	0.66	3.47	4.14	0.01	0.16	0.16	568.30	0.06	0.005	0.02	0.12	0.14	2.8E-04	0.01	0.01	20	2.03E-03	1.63E-04
Rollers	1	120	8	260	2,080	0.39	3.53	3.88	0.00	0.25	0.23	473.86	0.15	0.004	0.11	0.97	1.07	1.3E-03	0.07	0.06	130	4.22E-02	1.18E-03
Rubber Tired Loaders	2	250	8	260	4,160	0.29	1.27	3.42	0.00	0.11	0.10	469.51	0.15	0.004	0.33	1.45	3.93	5.5E-03	0.13	0.12	538	1.74E-01	4.90E-03
Scrapers	1	500	8	260	2,080	0.32	2.40	3.78	0.00	0.15	0.14	472.18	0.15	0.004	0.37	2.75	4.34	5.6E-03	0.17	0.16	541	1.75E-01	4.90E-03
Sweepers/Scrubbers	2	120	8	260	4,160	0.52	3.83	4.48	0.00	0.36	0.33	474.12	0.15	0.004	0.29	2.11	2.47	2.7E-03	0.20	0.18	261	8.44E-02	2.35E-03
Tractors/Loaders/Backhoes	2	120	8	260	4,160	0.33	3.60	3.33	0.00	0.21	0.19	475.15	0.15	0.004	0.18	1.98	1.83	2.7E-03	0.12	0.11	261	8.46E-02	2.35E-03
Welders	1	50	8	260	2,080	0.94	4.84	4.30	0.01	0.24	0.24	568.30	0.08	0.005	0.11	0.55	0.49	0.0008	0.03	0.03	65	0	0
											TOTAL				**4.7**	**32.4**	**45.9**	**0.064**	**2.26**	**2.11**	**6,156**	**1.7**	**0.1**

Notes:

1. OFFROAD EMISSION FACTORS, SacMetro AQMD, Road Construction Emissions Model, Version 8.1.0, 2016. Emission factors for year 2020 are used.
2. Conversion of 453.59 grams per pound and 2000 pounds per ton used for the calculations.

Table 4: On-Highway Vehicular Emissions Inventory

Pollutant	Emission Factors (g/mile)[1]			No. Cars[2]	No. Trucks[2]	No. Heavy Duty Trucks[2]	Miles per Vehicle per day[2]	Days/year[2]	Tons/year
	Passenger Cars	Pickup Trucks	Heavy Duty Trucks						
VOC	0.17	0.30	0.077	5	10	5	200	260	0.24
CO	2.9	6.1	1.02	5	10	5	200	260	4.63
NO_X	0.12	0.42	0.94	5	10	5	200	260	0.55
SO_2	0.0042	0.0054	0.0070	5	10	5	200	260	0.01
PM_{10}	0.0076	0.013	0.014	5	10	5	200	260	0.01
$PM_{2.5}$	0.0070	0.012	0.014	5	10	5	200	260	0.01
CO_2[3]	343.0	472.0	1467.0	5	10	5	200	260	789.30
CH_4[4]	0.017	0.016	0.033	5	10	5	200	260	0.02
N_2O[4]	0.0036	0.0066	0.0134	5	10	5	200	260	0.01

Notes:

1. Average annual emissions and fuel consumption for gasoline-fueled passenger cars (gasoline) and light trucks (gasoline) and short haul trucks (diesel). Emission rates are referenced from the Argonne National Laboratory Report, Updated Emission Factors of Air Pollutants from Vehicle Operations in GREET Using MOVES (ANL 2013). Emission Factors are based on Model Year 2018 vehicles.
2. Estimated annual vehicle fleet.
3. Emission Factor is based on Table 9 of the EPA's "Emission Factors for GHG Inventories", last modified in March 2018.
4. Direct Emissions from Mobile Combustion Sources, EPA GHG Guidance, January 2016

Table 5: Wind Erosion Emissions for Disturbed Areas

Pollutant	Particle Size Multiplier, k[1]	Emission Factor (T/acre-year)[2]	Total Acreage of Disturbance[3]	Potential Uncontrolled Emissions (tons/year)	Control Efficiency	Potential Controlled Emissions (tons/year)
TSP	1	0.38	2	0.8	0%	0.76
PM_{10}	0.5	0.19	2	0.4	0%	0.38
$PM_{2.5}$	0.075	0.03	2	0.1	0%	0.06

Notes:

1. AP-42 Table 11.9-1 and 11.9-4 indicates that for the wind erosion emission factor, "To estimate emissions on a shorter time scale (e. g., worst-case day), see the procedure presented in Section 13.2.5". AP-42 13.2.5 provides particle size multipliers which are applied to estimate size distribution from the TSP emission factor provided in AP-42 Table 11.9-1 and 11.9-4.
2. Uncontrolled particulate emissions from wind erosion of disturbance acreage are calculated from the TSP emission factor provided in AP-42 11.9-4 for exposed areas.
3. Data are based on an estimated two acres of disturbance area.

Table 1: Medical Waste Incineration Options		
Description	**Proposed Action Impacts**	**Air Impacts From**
Build a new incinerator facility	Design and build a new HMIWI facility on available, buildable, previously disturbed land in proximity to the contributing research facilities. The new HMIWI facility would be approximately 10,000 sq. ft. and have two HMIWI units that would meet all applicable installation, local, state, and federal regulations, and would be used to treat all regulated medical research waste generated at Fort Detrick. This project includes building information systems, fire protection and alarm systems, Intrusion Detection System installation, and energy monitoring control systems connections.	Construction Equipment Vehicle Transport Surface Disturbance

Table 2: Estimated Annual Emissions Related to Contruction Operations						
Estimated Emissions	**Emissions (tons/year)**					
	VOC	**CO**	**NOX**	**SO2**	**PM10**	**PM2.5**
Estimated Emissions	4.9	37.0	46.5	0.071	2.66	2.18
de minimis/New Source Review threshold	50	100	100	250	250	250
Exceeds de minimis/NSR threshold?	No	No	No	No	No	No

Table 2: Estimated Annual GHG Emissions	
Scenario/Activity	**Emissions CO_2e (metric tons/year)**
Construction Emissions	**6,358**

Table 3: COMBUSTION EMISSIONS FOR NONROAD EQUIPMENT

Equipment Type	Estimated NONROAD Inventory					Emission Factor (grams/hp/hour)[1]								Emission Rate (pounds/year)[2]								Annual Emissions (tons/year)[3]								
	No. Units	HP	hr/day	day/yr	hr/yr	VOC	CO	NOX	SO2	PM10	PM2.5	CO2	CH4	N2O	VOC	CO	NOX	SO2	PM10	PM2.5	CO2	CH4	N2O	VOC	CO	NOX	SO2	PM10	PM2.5	CO2	CH4	N2O
Air Compressors	2	120	8	260	4,160	0.49	3.70	3.40	0.01	0.22	0.22	568.30	0.04	0.004	538	4,070	3,747	6.6	247	247	625,441	48.4	4.7	0.27	2.03	1.87	3.3E-03	0.12	0.12	313	2.42E-02	2.35E-03
Cement and Mortar Mixers	2	25	8	260	4,160	0.72	2.40	4.44	0.01	0.19	0.19	568.30	0.07	0.005	166	550	1,020	1.6	43	43	130,300	14.9	1.1	0.08	0.27	0.51	8.0E-04	0.02	0.02	65	7.45E-03	5.45E-04
Concrete/Industrial Saws	2	50	8	260	4,160	0.80	4.55	4.20	0.01	0.21	0.21	568.30	0.07	0.005	366	2,087	1,927	3.2	97	97	260,600	33.0	2.2	0.18	1.04	0.96	1.6E-03	0.05	0.05	130	1.65E-02	1.09E-03
Cranes	2	250	8	260	4,160	0.38	1.79	4.56	0.00	0.19	0.17	472.95	0.15	0.004	880	4,105	10,476	11.2	431	397	1,084,381	350.8	9.8	0.44	2.05	5.24	5.6E-03	0.22	0.20	542	1.75E-01	4.90E-03
Crawler Tractors	2	250	8	260	4,160	0.36	1.55	4.63	0.00	0.17	0.16	472.94	0.15	0.004	825	3,565	10,635	11.2	400	368	1,084,364	350.8	9.8	0.41	1.78	5.32	5.6E-03	0.20	0.18	542	1.75E-01	4.90E-03
Crushing/Proc. Equipment	1	175	8	260	2,080	0.37	3.23	2.39	0.01	0.12	0.12	568.30	0.03	0.004	295	2,595	1,922	4.8	100	100	456,050	26.5	3.4	0.15	1.30	0.96	2.4E-03	0.05	0.05	228	1.32E-02	1.71E-03
Excavators	1	750	8	260	2,080	0.17	1.15	1.80	0.00	0.06	0.06	468.87	0.15	0.004	584	3,939	6,189	16.5	210	194	1,612,546	521.4	14.7	0.29	1.97	3.09	8.3E-03	0.11	0.10	806	2.61E-01	7.35E-03
Forklifts	2	120	8	260	4,160	0.46	3.76	4.13	0.00	0.31	0.28	471.53	0.15	0.004	505	4,138	4,555	5.4	339	312	518,940	167.8	4.7	0.25	2.07	2.28	2.7E-03	0.17	0.16	259	8.39E-02	2.35E-03
Generator Sets	2	120	8	260	4,160	0.36	3.38	3.17	0.01	0.18	0.18	568.30	0.03	0.004	401	3,720	3,497	6.6	197	197	625,441	35.2	4.7	0.20	1.86	1.75	3.3E-03	0.10	0.10	313	1.76E-02	2.35E-03
Graders	2	175	8	260	4,160	0.57	3.62	5.53	0.00	0.31	0.28	478.04	0.15	0.004	910	5,812	8,888	7.9	495	455	767,239	248.1	6.9	0.45	2.91	4.44	3.9E-03	0.25	0.23	384	1.24E-01	3.43E-03
Other Construction Equipment	2	175	8	260	4,160	0.39	3.24	4.11	0.00	0.22	0.20	469.98	0.15	0.004	622	5,193	6,608	7.9	348	320	754,308	244.0	6.9	0.31	2.60	3.30	3.9E-03	0.17	0.16	377	1.22E-01	3.43E-03
Other Material Handling Equipment	2	175	8	260	4,160	0.25	3.17	2.37	0.00	0.12	0.11	472.22	0.15	0.004	404	5,089	3,803	7.9	190	174	757,896	245.1	6.9	0.20	2.54	1.90	3.9E-03	0.09	0.09	379	1.23E-01	3.43E-03
Plate Compactors	1	15	8	260	2,080	0.66	3.47	4.14	0.01	0.16	0.16	568.30	0.06	0.005	45	239	285	0.6	11	11	39,090	4.1	0.3	0.02	0.12	0.14	2.8E-04	0.01	0.01	20	2.03E-03	1.63E-04
Rollers	1	120	8	260	2,080	0.39	3.53	3.88	0.00	0.25	0.23	473.86	0.15	0.004	214	1,943	2,139	2.7	136	125	260,753	84.4	2.4	0.11	0.97	1.07	1.3E-03	0.07	0.06	130	4.22E-02	1.18E-03
Rubber Tired Loaders	2	250	8	260	4,160	0.29	1.27	3.42	0.00	0.11	0.10	469.51	0.15	0.004	665	2,909	7,854	11.0	260	240	1,076,503	348.0	9.8	0.33	1.45	3.93	5.5E-03	0.13	0.12	538	1.74E-01	4.90E-03
Scrapers	1	500	8	260	2,080	0.32	2.40	3.78	0.00	0.15	0.14	472.18	0.15	0.004	733	5,504	8,684	11.2	338	311	1,082,608	350.1	9.8	0.37	2.75	4.34	5.6E-03	0.17	0.16	541	1.75E-01	4.90E-03
Sweepers/Scrubbers	2	120	8	260	4,160	0.52	3.83	4.48	0.00	0.36	0.33	474.12	0.15	0.004	572	4,212	4,939	5.4	396	365	521,787	168.7	4.7	0.29	2.11	2.47	2.7E-03	0.20	0.18	261	8.44E-02	2.35E-03
Tractors/Loaders/Backhoes	2	120	8	260	4,160	0.33	3.60	3.33	0.00	0.21	0.19	475.15	0.15	0.004	364	3,964	3,665	5.4	231	213	522,930	169.2	4.7	0.18	1.98	1.83	2.7E-03	0.12	0.11	261	8.46E-02	2.35E-03
Welders	1	50	8	260	2,080	0.94	4.84	4.30	0.01	0.24	0.24	568.30	0.08	0.005	215	1,110	988	1.6	55	55	130,300	19	1	0.11	0.55	0.49	0.0008	0.03	0.03	65	0	0
											TOTAL				**9,303**	**64,743**	**91,820**	**129**	**4,525**	**4,223**	**12,311,478**	**3,430**	**108**	**4.7**	**32.4**	**45.9**	**0.064**	**2.26**	**2.11**	**6,156**	**1.7**	**0.1**

Notes:

1. OFFROAD EMISSION FACTORS, SacMetro AQMD, Road Construction Emissions Model, Version 8.1.0, 2016. Emission factors for year 2020 are used.
2. Conversion of 453.59 grams per pound.
3. Conversion of 2000 pounds per ton.

Table 4: ASSUMPTIONS FOR ON-HIGHWAY VEHICLE EMISSIONS									
Pollutant	Emission Factors (g/mile)[1]			No. Cars[2]	No. Trucks[2]	No. Heavy Duty Trucks[2]	Miles per Vehicle per day[2]	Days/yr[2]	Tons/yr
	Passenger Cars	Pickup Trucks	Heavy Duty Trucks						
VOC	0.17	0.30	0.077	5	10	5	200	260	0.24
CO	2.9	6.1	1.02	5	10	5	200	260	4.63
NOX	0.12	0.42	0.94	5	10	5	200	260	0.55
SO2	0.0042	0.0054	0.0070	5	10	5	200	260	0.01
PM10	0.0076	0.013	0.014	5	10	5	200	260	0.01
PM2.5	0.0070	0.012	0.014	5	10	5	200	260	0.01
CO_2[3]	343.0	472.0	1467.0	5	10	5	200	260	789.30
CH_4[4]	0.017	0.016	0.033	5	10	5	200	260	0.02
N_2O[4]	0.0036	0.0066	0.0134	5	10	5	200	260	0.01

Notes:

1. Average annual emissions and fuel consumption for gasoline-fueled passenger cars (gasoline) and light trucks (gasoline) and short haul trucks (diesel). Emission rates are referenced from the Argonne National Laboratory Report, Updated Emission Factors of Air Pollutants from Vehicle Operations in GREET Using MOVES (ANL 2013). Emission Factors are based on Model Year 2018 vehicles.

2. Estimated annual vehicle fleet.

3. Emission Factor is based on Table 9 of the EPA's "Emission Factors for GHG Inventories", last modified in March 2018.

4. Direct Emissions from Mobile Combustion Sources, EPA GHG Guidance, January 2016

Table 5: Wind Erosion of Surface Disturbance Areas (AP-42 Table 11.9-4)

Pollutant	Particle Size Multiplier, k[1]	Emission Factor (T/acre-yr)[2]	Total Acreage of Disturbance[3]	Potential Uncontrolled Emissions (tons/yr)	Control Efficiency	Potential Controlled Emissions (tons/year)
TSP	1	0.38	2	0.8	0%	0.76
PM_{10}	0.5	0.19	2	0.4	0%	0.38
$PM_{2.5}$	0.075	0.03	2	0.1	0%	0.06

Notes:

[1] AP-42 Table 11.9-1 and 11.9-4 indicates that for the wind erosion emission factor, "To estimate emissions on a shorter time scale (e. g., worst-case day), see the procedure presented in Section 13.2.5". AP-42 13.2.5 provides particle size multipliers which are applied to estimate size distribution from the TSP emission factor provided in AP-42 Table 11.9-1 and 11.9-4.

[2] Uncontrolled particulate emissions from wind erosion of disturbance acreage are calculated from the TSP emission factor provided in AP-42 11.9-4 for exposed areas.

[3] Data are based on an estimated two acres of disturbance area.

Table 6: INCINERATOR FILTERS TRANSFER EMISSIONS			
Pollutant	**Emission Factors (g/mile)[1]**	**Miles per year[2]**	**Tons/yr**
VOC	0.077	560	4.77E-05
CO	1.02	560	6.30E-04
NOX	0.94	560	5.80E-04
SO2	0.0070	560	4.32E-06
PM10	0.014	560	8.58E-06
PM2.5	0.014	560	8.33E-06
CO2[3]	1467.0	560	9.06E-01
CH4[4]	0.033	560	2.06E-05
N2O[4]	0.0134	560	8.27E-06

Notes:

1. Average annual emissions and fuel consumption for short haul trucks (diesel). Emission rates are referenced from the Argonne National Laboratory Report, Updated Emission Factors of Air Pollutants from Vehicle Operations in GREET Using MOVES (ANL 2013). Emission Factors are based on Model Year 2018 vehicles.

2. Estimated annual vehicle fleet. The filters are transported about 4 times a year to the landfill site in York, PA. Estimated round trip mileage between Ft. Detrick and the landfill site is about 140 miles.

3. Emission Factor is based on Table 9 of the EPA's "Emission Factors for GHG Inventories", last modified in March 2018.

4. Direct Emissions from Mobile Combustion Sources, EPA GHG Guidance, January 2016