



Executive Director's Recommendation

Commission Meeting: September 5, 2019

PROJECT

**Beltsville Agricultural Research Center
Solar Array Site Selection Review**

Beltsville Agricultural Research Center
10300 Baltimore Avenue
Beltsville, Maryland

SUBMITTED BY

United States Department of Agriculture
Agricultural Research Service

REVIEW AUTHORITY

Federal Projects in the Environs
per 40 U.S.C. § 8722(b)(1)

NCPC FILE NUMBER

8074

NCPC MAP FILE NUMBER

3212.10(38.00)44931

APPLICANT'S REQUEST

Approval of preliminary site
development plans

PROPOSED ACTION

Approve concept comments

ACTION ITEM TYPE

Staff Presentation

PROJECT SUMMARY

The United States Department of Agriculture proposes to lease multiple sites (60 potential maximum) on its Beltsville Agricultural Research Center (BARC) campus to an Independent Power Producer (IPP) under a 20-year contract to design, install, maintain, own, and operate solar panel arrays. The contract, known as an Energy Savings Performance Contract, would supply BARC with on-site, cost-efficient, renewable energy to comply with several federal directives (Energy Policy Act 2005 / Energy Security and Independence Act / Executive Order 13834). The future arrays would be designed to supply a minimum of 7.5% of the campus's total annual electrical power needs.

KEY INFORMATION

- Beltsville Agricultural Research Center will select a future IPP through a future competitive process.
 - Potential array sites include in-ground, parking lot canopy, and agricultural structure rooftop sites. Previous occupied building rooftop sites were eliminated due to technical installation and maintenance issues, as well as in-ground sites that would have adversely impacted historic buildings as identified by the Maryland Historic Trust.
 - The current information provided is conceptual at this point. Detailed site designs will be developed by a future IPP for specific locations.
 - BARC contains the greatest concentration of agriculture research programs within the Agricultural Research Service nation-wide.
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RECOMMENDATION

The Commission:

Supports the intent of the project to install solar arrays throughout the Beltsville Agricultural Research Center (BARC) campus to meet various federal sustainability goals and encourages development of as many sites as feasible to maximize renewable energy production.

Notes that the project is consistent with Federal Environment Element Policy FE.L.5, which encourages the federal government to pursue energy conservation strategies at a multi-building or district-level.

Notes that the BARC removed seven previous potential in-ground sites that would have required removal of existing historic structures based on a determination by the Maryland Historic Trust.

Recommends that the BARC prioritize selection of future potential array development sites based on the following planning-related criteria:

1. Prioritize agricultural building rooftop and parking lot sites over undeveloped sites.
2. Prioritize land that is designated “Not Prime Farmland” over land designated as “Prime Farmland” and “Farmland of Statewide Importance.”
3. Prioritize land that is not prone to flooding, outside of the 100-year and 500-year floodplains.
4. Prioritize land that would not require any healthy tree removal.

Recommends the following site-specific design strategies to help develop the future array sites:

- Landscape should buffer sites that are situated near neighboring residential and commercial development, with native vegetation planted per county guidelines related to density and species;
- Tree replacement should adhere to NCPC Comprehensive Plan Policy FE.G.2, which states that trees should be replaced to prevent a net tree loss to the project area; and
- Arrays should be situated using the natural topography as much as possible to help preserve the campus’s pastoral setting.

Finds all the proposed sites can generally support solar facilities, but recommends the applicant work to appropriately screen installations from any nearby residential uses, particularly in Areas 2 and 3.

Notes that BARC will need to submit site-specific development plans for each future array installation to NCPC for review pursuant to the National Capital Planning Act, as well as review by the Prince George’s County Planning Department and other relevant State agencies per NCPC’s referral process.

Recommends that the United States Department of Agriculture submit an updated BARC master plan for NCPC review to ensure that its accuracy in reflecting anticipated changes to the campus.

PROJECT REVIEW TIMELINE

Previous actions	None.
Remaining actions (anticipated)	2020 – Final site development plan review for each specific array location.

PROJECT ANALYSIS

Executive Summary

The project will help the Beltsville Agricultural Research Center (BARC) attain multiple federal sustainability goals and objectives, resulting in air quality benefits, economic benefits to the local economy, and reducing the campus's dependence on off-site energy sources. Staff finds that the project is consistent with a number of policies from NCPC's Federal Environment Element. The submission expresses a desire to develop enough sites to enable BARC to meet a minimum of 7.5% (3,150,000 kWh) of its total annual energy requirement through solar power, with potential to exceed that amount. At this time, it is unclear how many sites would need to be developed to attain the 7.5% threshold. Staff recommends that the Commission **support the intent of the project to install solar arrays throughout the Beltsville Agricultural Research Center campus to meet various federal sustainability goals and encourages development of as many sites as feasible to maximize renewable energy production.**

Background

The United States Department of Agriculture purchased a farm in Beltsville, Maryland in 1910, referred to as the Experiment Farm of the Dairy and Animal Husbandry Divisions. Major growth occurred during the 1930s, with extensive improvement projects performed by the Civilian Conservation Corps. All USDA prior research activities were consolidated to the current Beltsville Agricultural Research Center (BARC) campus from Bethesda, Maryland; Arlington, Virginia; and Washington, D.C. by 1942. Over the years, some of the original BARC property was transferred to other federal agencies such as the Goddard Space Flight Center (NASA) and Rowley Training Center (United States Secret Service).

The existing campus encompasses agriculture fields and supporting infrastructure, laboratories, office buildings, and unoccupied agricultural-related storage and equipment structures. BARC is comprised of approximately 6,615 acres, with a historic district formally named, the Beltsville Agricultural Research Center Historic District. The District is included in the Maryland Inventory of Historic Properties and has been determined eligible for listing in the National Register of Historic Places for its role as a national center of agricultural experimentation and testing. The

BARC property is organized into several management areas, identified as: South Farm, West Farm, Linkage Farm, Central Farm, and East Farm. Roadway access to BARC is available from Sunnyside Avenue, Powder Mill Road, and Edmonston Road. Surrounding off-site land uses include undeveloped open space/forested land; residential and commercial uses within the suburban communities of Beltsville, Greenbelt, and College Park; and adjacent federal properties (Goddard Space Flight Center and Rowley Training Center.)

The campus is topographically varied, with potential array sites ranging in elevation from 92-213 feet above sea level, encompassing stands of forests, lower-lying flood areas, streams, small ponds, and rolling hills. Campus soils vary in quality for agricultural use, classified as: Prime Farmland, Farmland of Statewide Importance, and Not Prime Farmland. Sixteen different soil composition types are located on BARC, differentiated by factors such as water runoff class/storage capacity, and erodibility.

Potential future array sites are categorized into three different types – ground-mounted arrays (21), agricultural structure rooftop arrays (10), and parking area canopy arrays (29). BARC previously considered rooftop sites on a number of occupied campus buildings (12) but dismissed these from further consideration based on technical and maintenance issues. Also, seven potential in-ground sites were eliminated based on potential adverse impacts to the BARC historic district as identified by the Maryland Historic Trust. Staff recommends that the Commission **note that the BARC removed seven previous potential in-ground sites that would have required removal of existing historic structures based on a determination by the Maryland Historic Trust.**

Analysis

The applicant requests NCPC's **preliminary site development approval** of the potential 60 remaining future array sites based on an Environmental Assessment (EA) report and Finding of No Significant Impact (FONSI) for the proposal. Though without defined plans (elevations, array dimensions, circulation, ancillary equipment, etc.) for each site, the EA/FONSI only enables NCPC to offer more conceptual guidance on the proposal. However, BARC can use Commission comments to help guide selection of an IPP and future array sites.

From a planning perspective, BARC should prioritize arrays in previously developed areas before considering open space/agricultural field development and other locations to minimize potential natural environment impacts. The submission identifies 39 potential sites that would locate arrays above surface parking and atop of agricultural-related structures. These potential sites are clustered in the North Farm, Linkage Farm, and Central Farm areas on BARC.

To help preserve BARC's research mission, sites should be prioritized on land that is identified as Not Prime Farmland over Prime Farmland and Farmland of Statewide Importance land. The EA describes these designations as based on soil quality, permeability, acidity level, and sodium content. The submission shows 18 potential sites on land that is identified as Not Prime Farmland, situated on the East, North, and Linkage Farm areas on BARC.

Array sites outside of lower-lying, flood prone areas (100- and 500-year floodplain) should be selected over sites within floodplain areas. Flooding may damage the array equipment and/or prevent operation/maintenance during flood conditions. Submission materials show seven potential development sites in floodplain areas. Six of the seven locations are ground-mounted, with most of the sites located in the North Farm area. While a floodplain location should not preclude a solar array, other non-floodplain areas should be considered first.

Lastly, BARC should prioritize sites that would not require removal of any healthy tree clusters over sites with clustered trees. Submission materials show only two ground-mounted sites that would require tree cluster removal. One potential site is situated in the Linkage Farm and the other site is situated in the East Farm area of BARC.

Based on the previous discussion, BARC should articulate selection guidelines by which to prioritize potential future array sites when reviewing IPP proposals. Therefore, staff recommends that the Commission **recommend that BARC prioritize selection of future potential array development sites based on the following planning-related criteria:**

- **Prioritize agricultural building rooftop and parking lot sites over undeveloped sites.**
- **Prioritize land that is designated “Not Prime Farmland” over land designated as “Prime Farmland” and “Farmland of Statewide Importance.”**
- **Prioritize land that is not prone to flooding, outside of the 100-year and 500-year floodplains.**
- **Prioritize land that would not require any healthy tree removal.**

BARC may also want to situate solar arrays near existing electrical infrastructure to minimize installation/maintenance costs, as well as minimize environmental impacts from excavation and other construction-related activities. Staff is unable to determine where these more cost-effective sites are located based on the information provided through the EA. BARC may choose to encourage development of these sites through the bidding process to minimize environmental disturbance to the campus. Finally, staff notes that the purpose of the planning-related criteria above are for prioritization only and that it may still be beneficial to have solar arrays on any of these sites.

In addition to previous selection criteria, the future IPP should use the following development strategies to designing specific array sites as follows:

- Landscape should buffer sites that are situated near neighboring residential and commercial development, with native vegetation planted per county guidelines related to density and species;
- Tree replacement should adhere to NCPC Comprehensive Plan Policy FE.G.2, which states that trees should be replaced to prevent a net tree loss to the project area; and

- Arrays should be situated using the natural topography as much as possible to help preserve the campus's pastoral setting.

The strategies can be articulated within the Request for Proposals (RFP) used to solicit IPP bids so that providers can calculate project costs more accurately. The strategies are grounded in NCPC Comprehensive Plan policies as well as recommendations from the Prince George's Department of Planning. Therefore, staff recommends that the Commission **recommend use of the previously articulated specific design strategies during future site-specific planning and development phases.**

All potential sites under consideration appear to be reasonable selections for solar array development based on the conceptual information given in the EA. Once an IPP is selected by BARC and specific sites are known, with detailed development plans available, NCPC may have further comments to provide to the applicant. Staff notes however, that the sites in potential installation Areas 2 and 3 are situated close to residential and commercial areas outside of the BARC campus. Therefore, the applicant should work with the IPP to appropriately screen each of these sites, if used, to help shield their visibility from off-campus locations. Therefore, staff recommends that the Commission **find all the proposed sites can generally support solar facilities, but recommends the applicant work to appropriately screen installations from any nearby residential uses, particularly in Areas 2 and 3.**

The current BARC submission includes conceptual typology and locational information for a set of potential future array sites that can be selected by an IPP. As such, BARC will need to submit development plans for each specific array site when those are available. In addition, each site development proposal will require review by relevant State and county agencies based on NCPC's referral policies. NCPC submission policies require plans to be developed to a reasonable degree of certainty (25-35%) for preliminary review and after design decisions are permanently set (60-70%) for final review. Therefore, staff recommends that the Commission **note that BARC will need to submit site-specific development plans for each future array installation to NCPC for review pursuant to the National Capital Planning Act, as well as review by the Prince George's County Planning Department and other relevant State agencies per NCPC's referral process.**

CONFORMANCE TO EXISTING PLANS, POLICIES AND RELATED GUIDANCE

Comprehensive Plan for the National Capital

As noted above, this project meets basic goals of the Comprehensive Plan. In particular, the future potential array installations are supported by Federal Environment Element Policy FE.L.5, which encourages the federal government to pursue energy conservation strategies at a multi-building or district-level. Staff recommends that the Commission note this point based on its direct applicability to the BARC project. Therefore, staff recommends that the Commission **note that the project is consistent with Federal Environment Element Policy FE.L.5, which encourages**

the federal government to pursue energy conservation strategies at a multi-building or district-level.

Relevant Federal Facility Master Plan

The project is not included in the current master plan for the campus, which was previously approved by the Commission in 1996. However, the project was unforeseen at the time of the update, and the applicant considered the campus's larger development goals when deciding where to site future potential solar arrays. Staff notes that current NCPC guidelines require federal agencies to review master plans at least every five years to ensure they accurately reflect anticipated changes to the campus/installation. Therefore, staff recommends that the Commission recommend **that the United States Department of Agriculture submit an updated BARC master plan for NCPC review to ensure that its accuracy in reflecting anticipated changes to the campus.**

National Historic Preservation Act

As part of the project's Environmental Assessment process, the applicant submitted the project to the Maryland Historical Trust for review and comment. The Trust issued a finding of "no adverse effects" for all but seven of the original sites, which would have required removal of existing historic structures. For projects within the Environs, outside of the District of Columbia, NCPC does not have a formal review responsibility under the National Historic Preservation Act.

National Environmental Policy Act

The United States Department of Agriculture undertook an Environmental Assessment to analyze the potential impact of the future array sites to natural and manmade environments, concluding in a Finding of No Significant Impact issued on February 13, 2019. For projects within the Environs, outside of the District of Columbia, NCPC does not have a formal review responsibility under the National Environmental Policy Act.

CONSULTATION

The project was referred out to the Maryland Department of Planning clearinghouse, which forwarded the project to the following agencies: Maryland Department of Natural Resources, Maryland Department of Transportation, Maryland Department of the Environment, Maryland Department of Planning, and Maryland Historical Trust. Each of the review agencies found the project to be generally consistent with their plans, programs, and objectives, with no significant comments provided.

In addition, NCPC and the Maryland Department of Planning forwarded the array project to the Prince George's County Department of Planning for referral review, which provided the following notable comments:

- Existing standing structures should be prioritized first for solar array placement;

- Open, unforested land is preferred for future solar array development, with sites not located on prime agricultural farmland;
- A minimum 20-foot wide landscape buffer-yard should be provided along solar array sites that are adjacent to multi-family residential uses, with 80 planting units per 100 linear feet of property line. All plants should be native species;
- A minimum 10-foot wide planting strip should be provided along solar array sites that front on public roadways. The landscape strip should be planted with one shade tree and shrubs per 35 feet of frontage. All plants should be native species;
- A mix of cover vegetation for the enhancement of habitat and site pollinator value should be provided for all sites that require vegetative coverage;
- All development sites will require review by the Prince George's County Fire Department to determine if mitigation measures are required; and
- BARC should submit more detailed development plans for each site to the PGCPD for review when available, prior to installation.

Staff has incorporated several of these comments into its draft Executive Director Recommendation for consideration and adoption by the Commission.

ONLINE REFERENCE

The following supporting documents for this project are available online at www.ncpc.gov:

- Environmental Assessment (NEPA) & Finding of No Significant Impact
- Maryland Historic Trust (MHT) Review Determination
- Project Summary Presentation

Prepared by Michael Weil
08/29/2019

POWERPOINT (ATTACHED)

Solar Photovoltaic Array Sites

10300 Baltimore Avenue, Beltsville, Maryland

Approval of Preliminary Site Development Plans

United States Department of Agriculture, Agricultural Research Service

Project Summary



Commission Meeting Date: September 5, 2019

NCPC Review Authority: 40 U.S.C. § 8722(b)(1)

Applicant Request: Approval of preliminary site development plans

Session: Staff Presentation

NCPC Review Officer: Michael Weil

NCPC File Number: 8074

Project Summary:

The U.S. Department of Agriculture (USDA) is proposing to lease multiple sites on its Beltsville Agricultural Research Center (BARC) to an Independent Power Producer (IPP) under a 20-year contract to design, install, maintain, own, and operate multiple solar panel arrays. The contract would provide BARC with on-site, cost-efficient renewable energy in compliance with several federal government renewable energy directives (*Energy Policy Act 2005 / Energy Security and Independence Act (EISA) / Executive Order 13834*). The contract – known as an Energy Savings Performance Contract (ESPC) - would also allow BARC to support local renewable energy infrastructure development, reduce energy costs, and support broader green power initiatives through purchase of renewable energy certificates (RECs), applied towards annual Agency renewable energy goals.

BARC anticipates that an IPP, to be selected through a future competitive process, would develop one or more of approximately 50 potential on-campus sites, which are identified in the current project submission. Potential sites include a mixture of in-ground, canopy, and agricultural-related structure rooftop arrays. Once operational, the arrays are projected to generate a minimum of 7.5 percent of BARC's total annual electricity budget, and total power generation may exceed the 7.5 percent goal. The current information provided is conceptual, and future specific site development designs will be undertaken by the IPP.

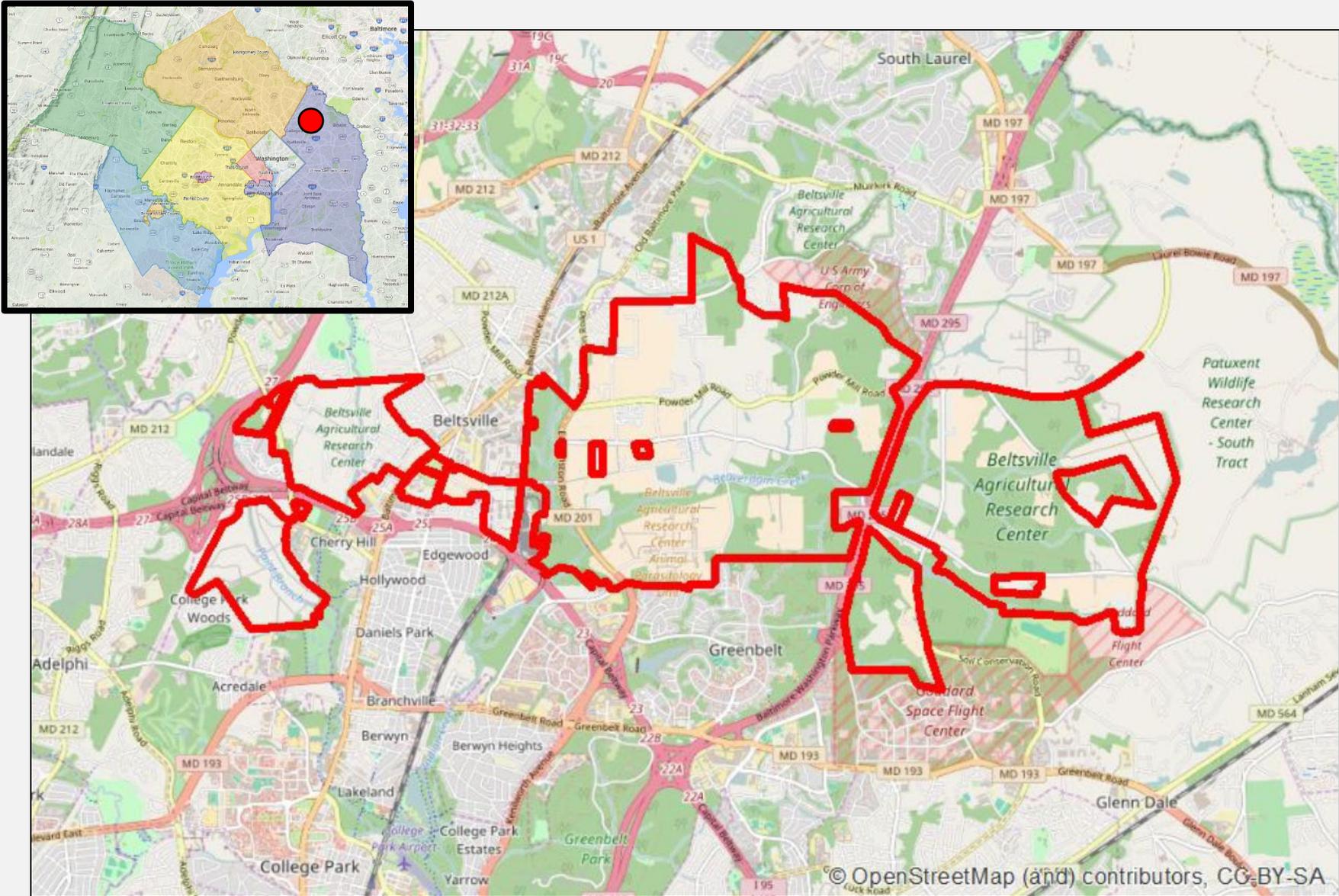
Project Summary

The following bullets describe each type of potential array installation:

- **Agricultural structure rooftop arrays** - panels mounted on open-air storage buildings and sheds that have irregularly shaped roofs to support storage, equipment, as well as shade and weather protection. These agriculture-specific buildings/structures are not considered “finished buildings” compared to other occupied buildings on-campus.
- **Ground-mounted arrays** - pole-mounted panels aligned in an east-west direction to facilitate southern exposure for maximum light collection. The poles will be mechanical-auger dug or driven into the ground to avoid significant excavation or need for concrete pads for footing. Grading of the natural ground condition is not proposed for this type of array. Any gaps between the array structures not needed for maintenance or operations will be planted with pollinator friendly herbaceous plant species.
- **Parking canopy arrays** – pole-mounted into concrete footers, providing overhead shading/cover to parked vehicles. These arrays will be oriented to follow the axis of existing parking, with no related reduction in capacity. The arrays will be tilted so that they face south at a proper angle of tilt to maximize solar exposure. Flat roofs for parking arrays may be considered at the discretion of the IPP.

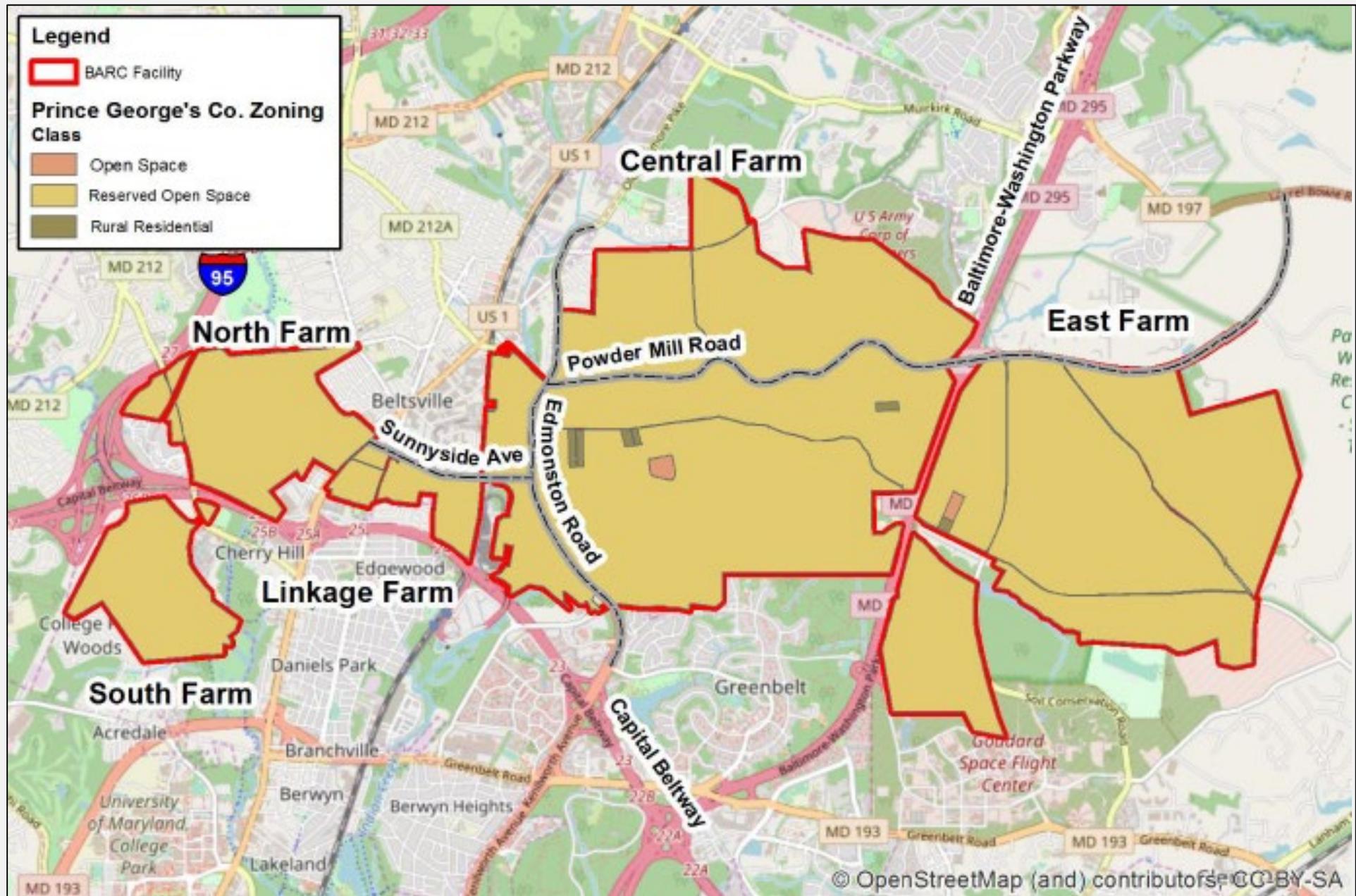
The IPP would be responsible for conducting regular inspections of the arrays, cleaning them as needed with compressed air or power washing. All maintenance activities would occur on an as-needed basis and would not require the use of heavy equipment. At the end of the 20-year ESPC contract, all solar array equipment would transfer to the ownership of the federal government at fair market value. Arrays installed in open ground areas would require surface restoration if the equipment is removed.

Site Location

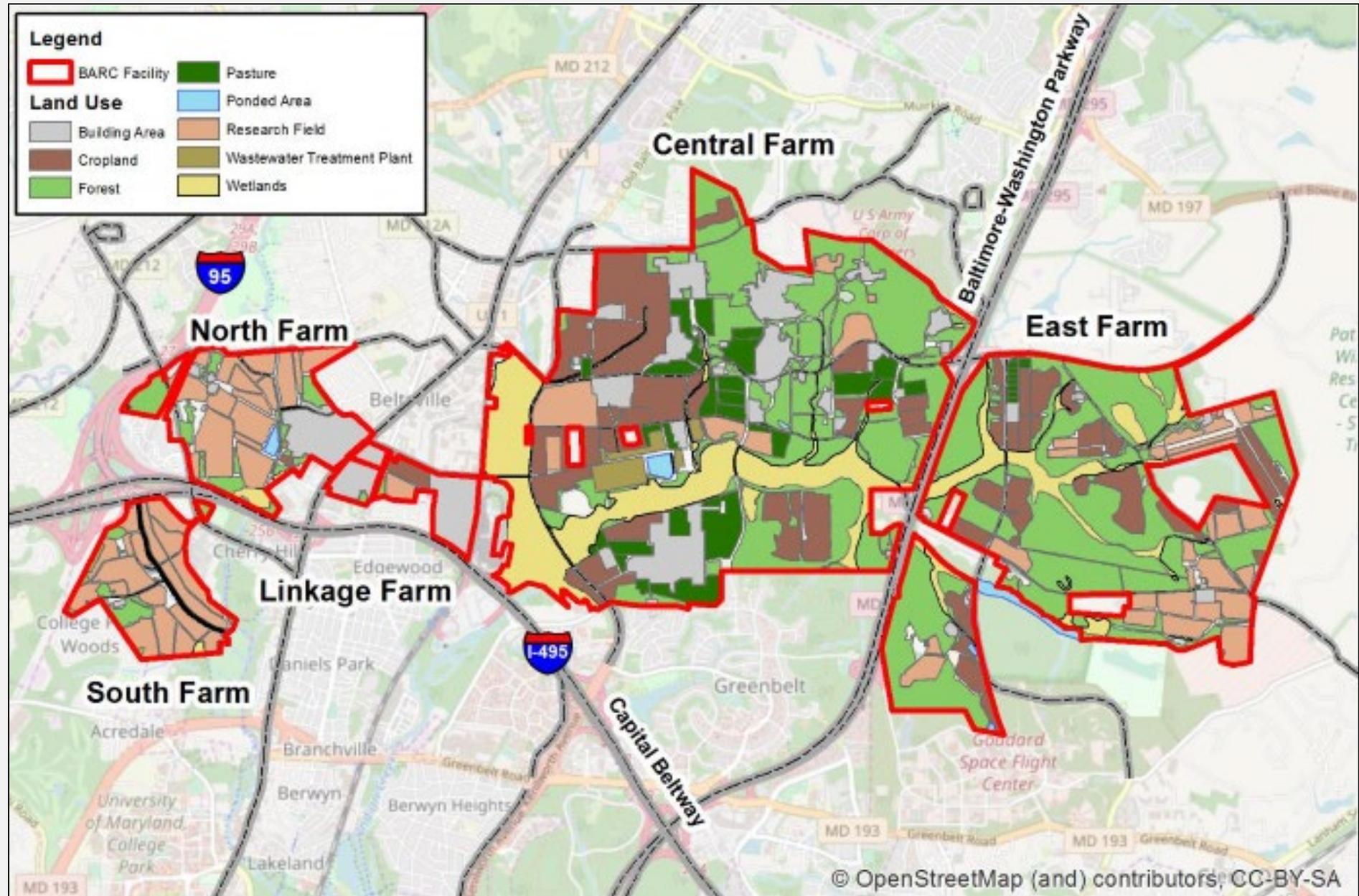


Location Map

Surrounding Land Use



BARC Land Use



Array Type Examples



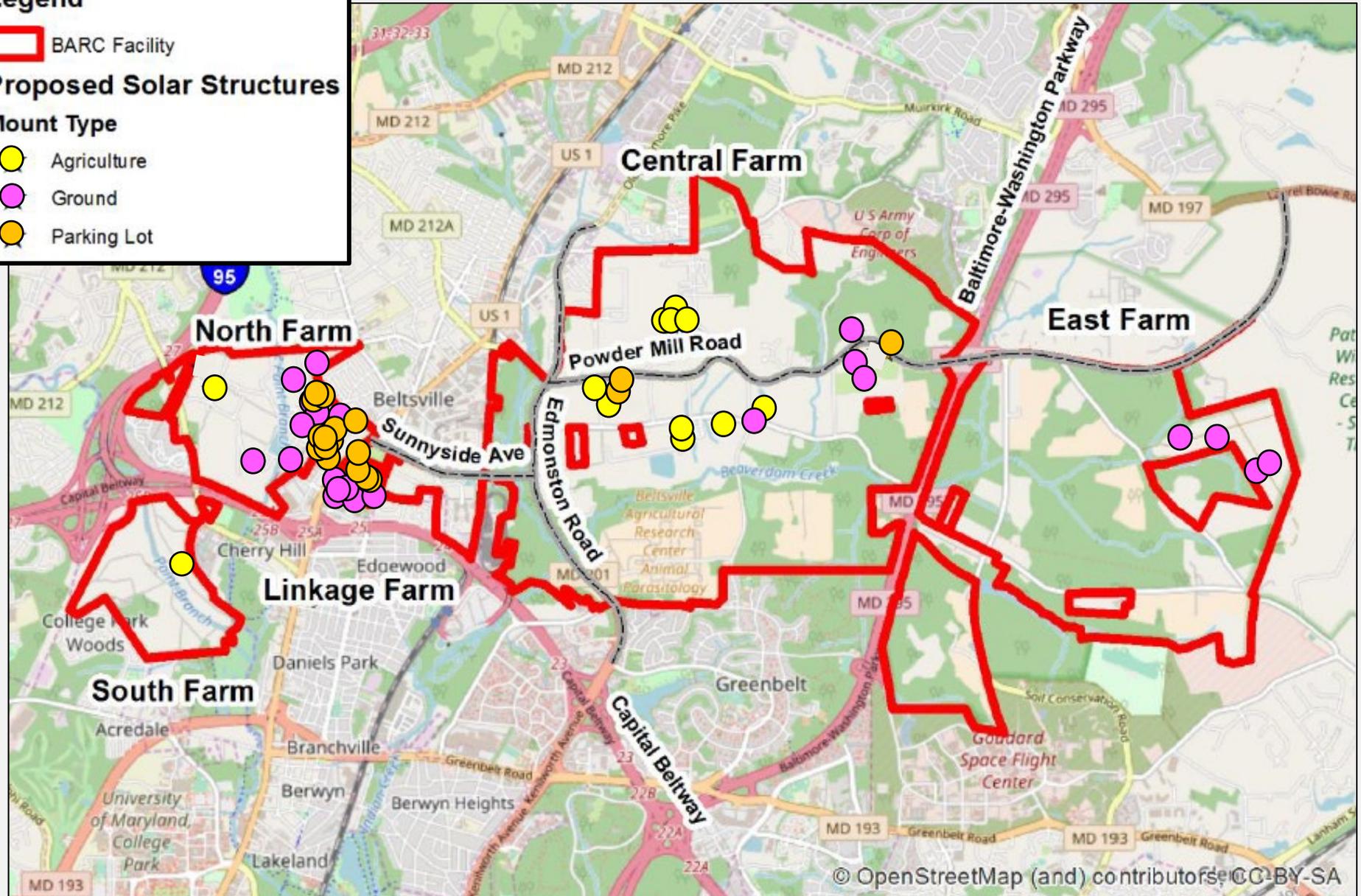
Figure 4: Examples of proposed types of solar facilities at BARC

Note: Examples from upper to left to lower right include agriculture building, ground mount, parking mount, and roof mount. (Photos courtesy USDA)

Array Site Types

Legend

- BARC Facility
- Proposed Solar Structures**
- Mount Type**
- Agriculture
- Ground
- Parking Lot



Array Site Types

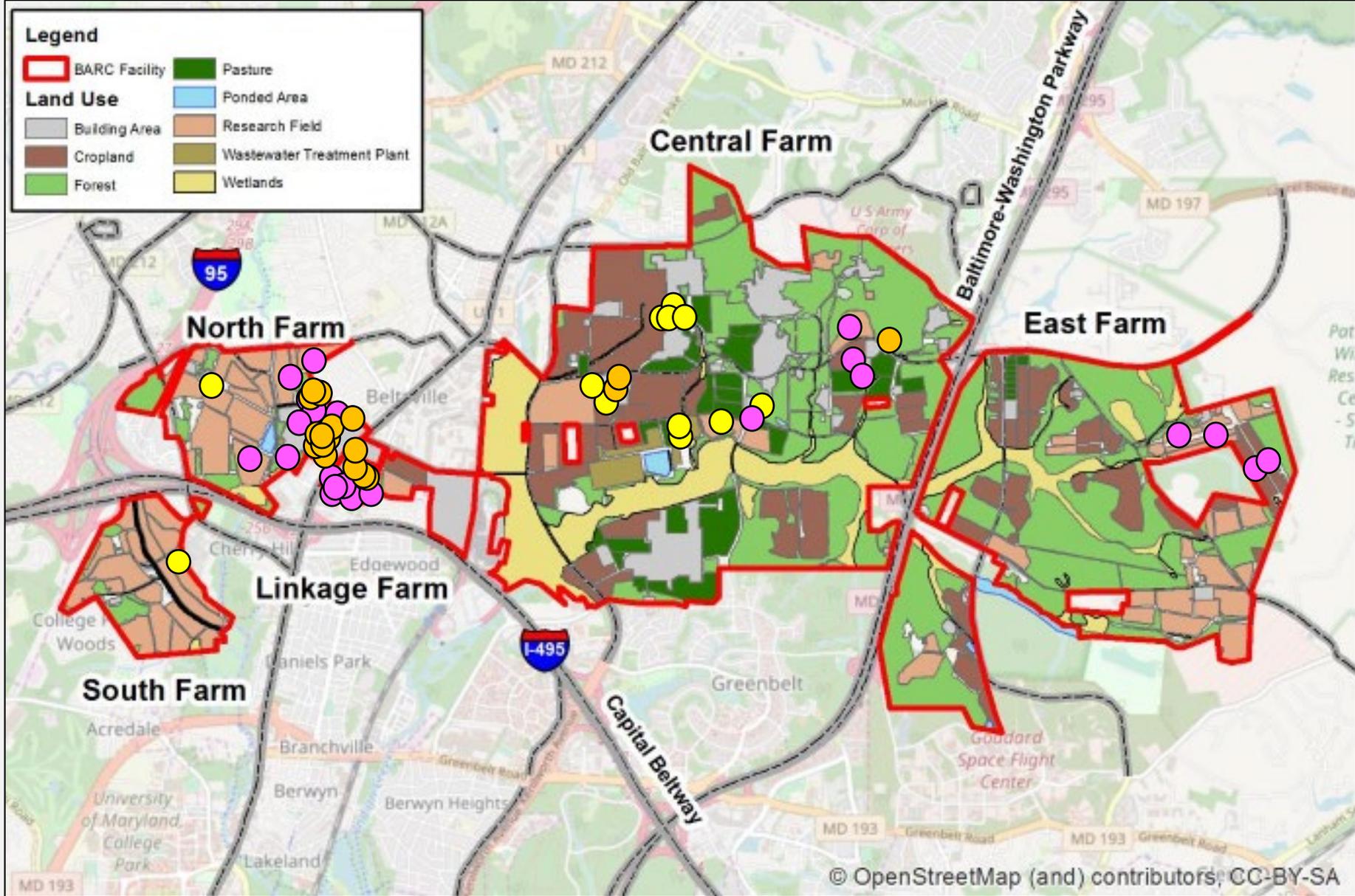
Legend

 BARC Facility

Proposed Solar Structures

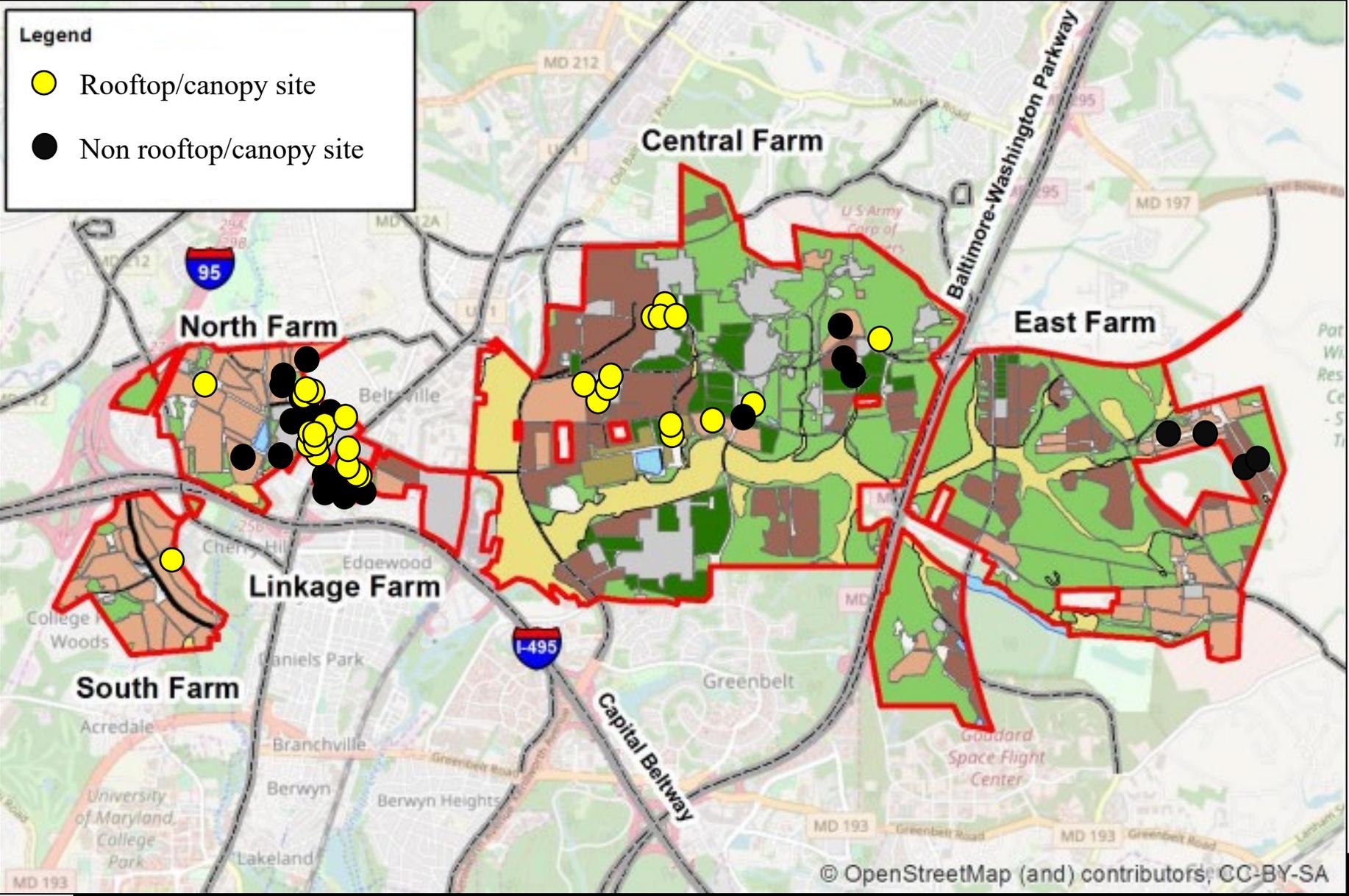
Mount Type

-  Agriculture
-  Ground
-  Parking Lot

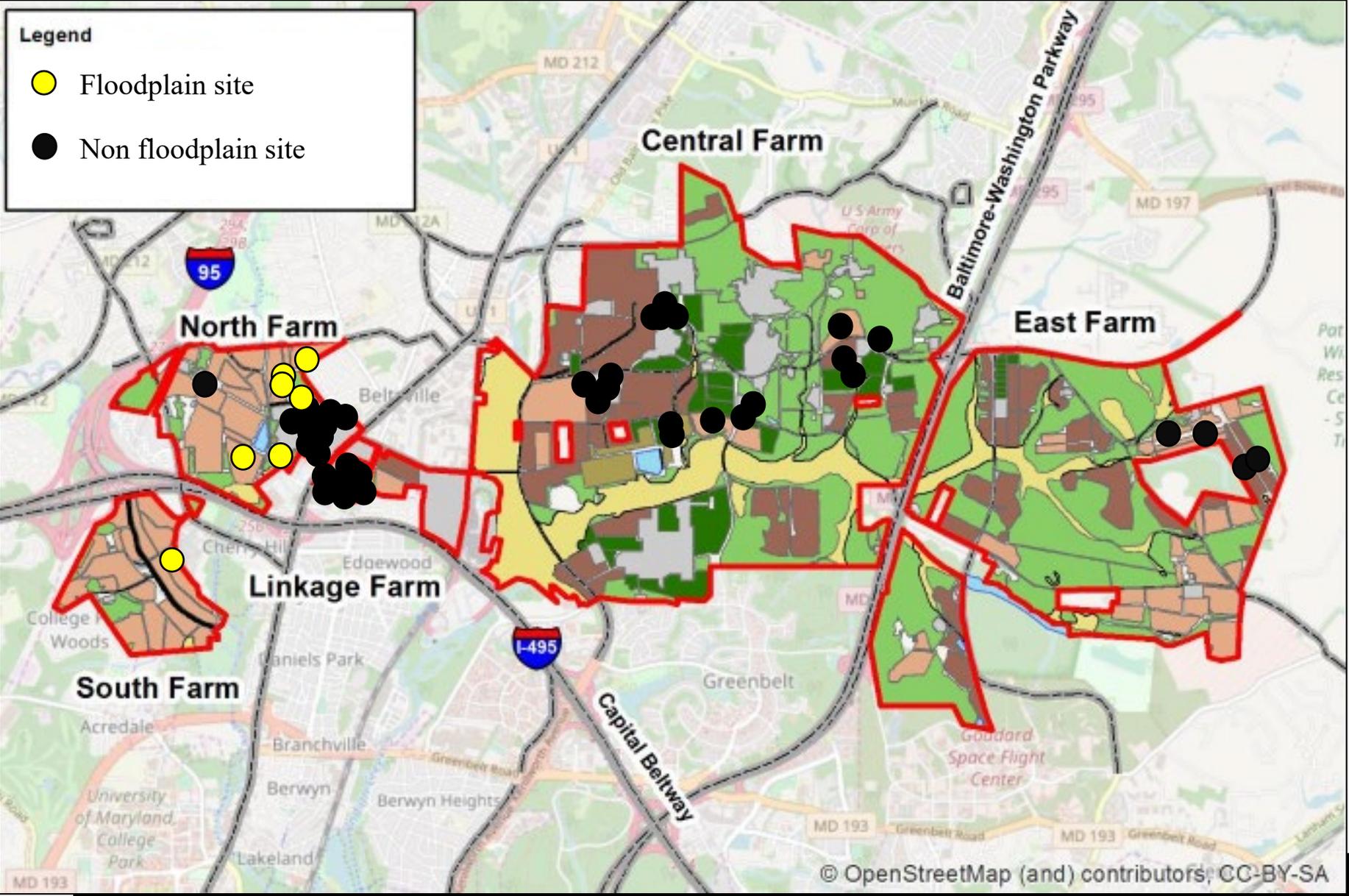


Array Sites:

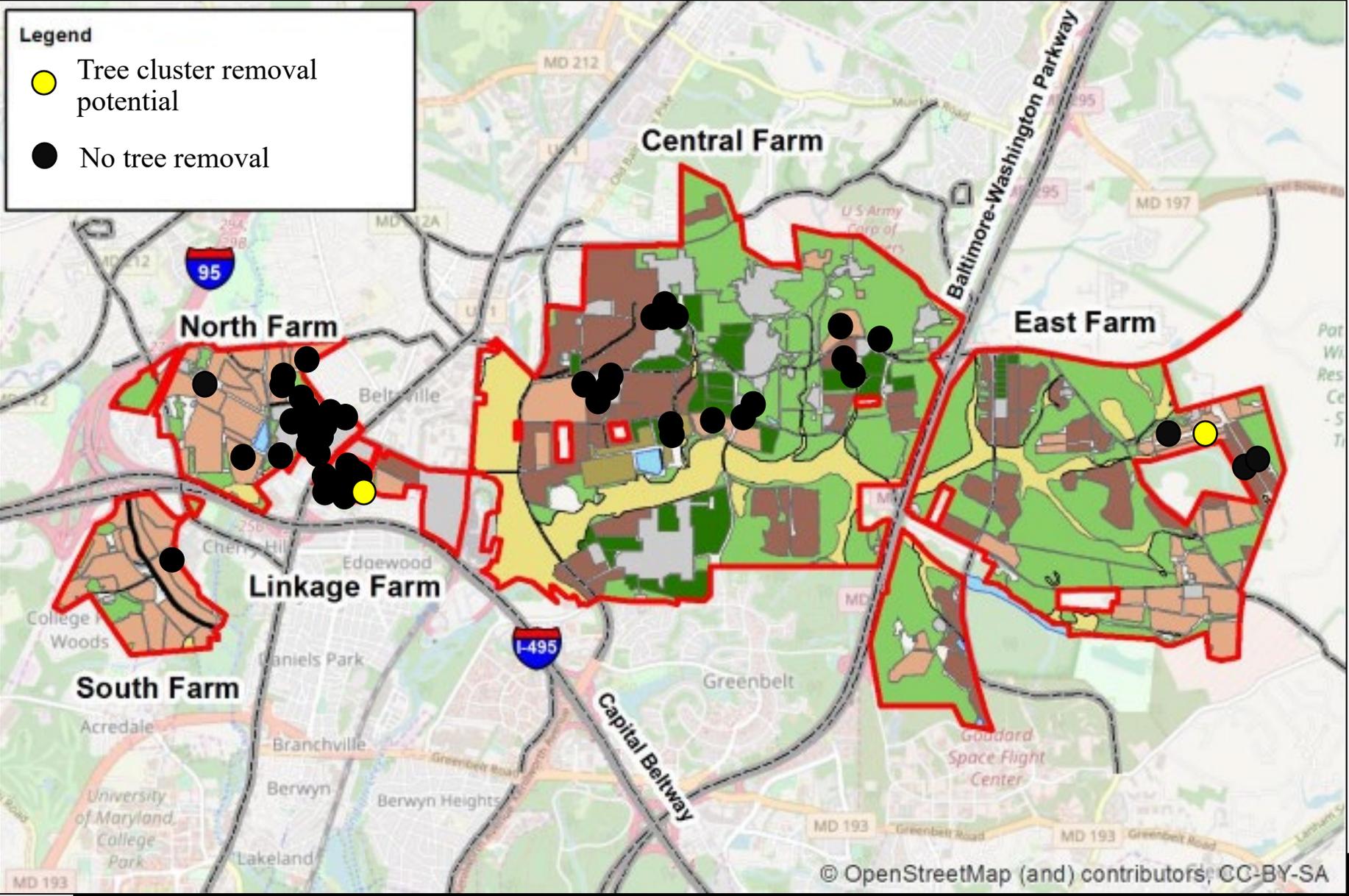
*Rooftop
/Canopy*



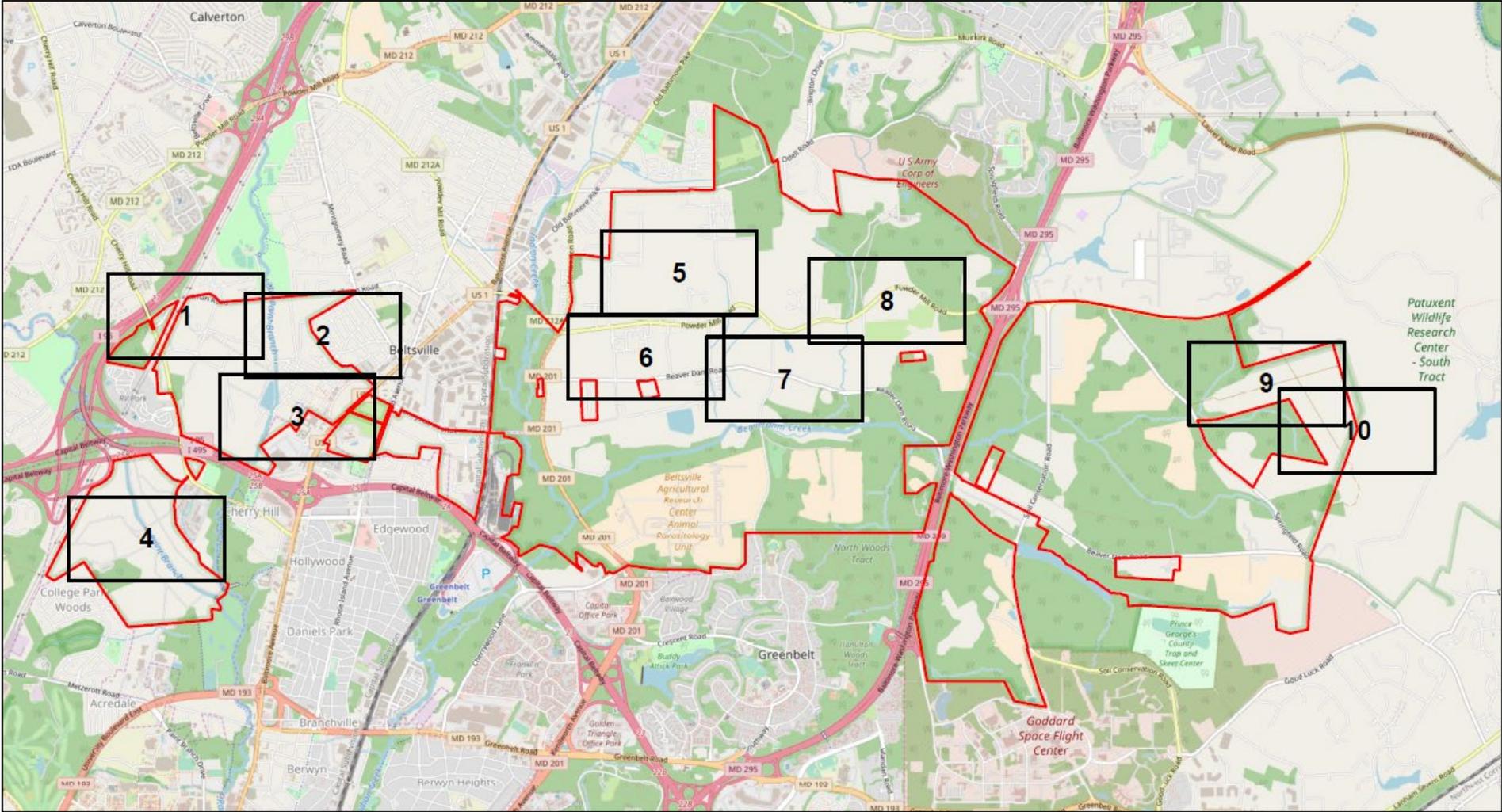
Array Sites: *Floodplains*



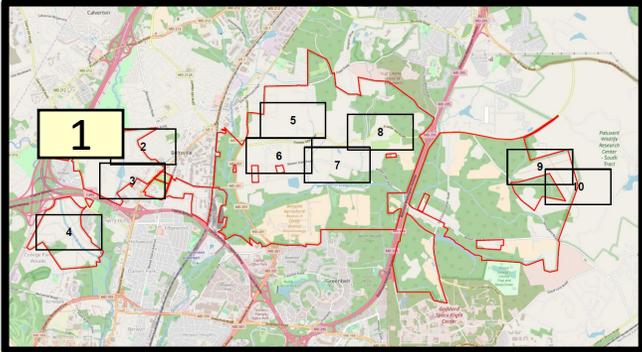
Array Sites: *Tree Removal*



Potential Installation Areas



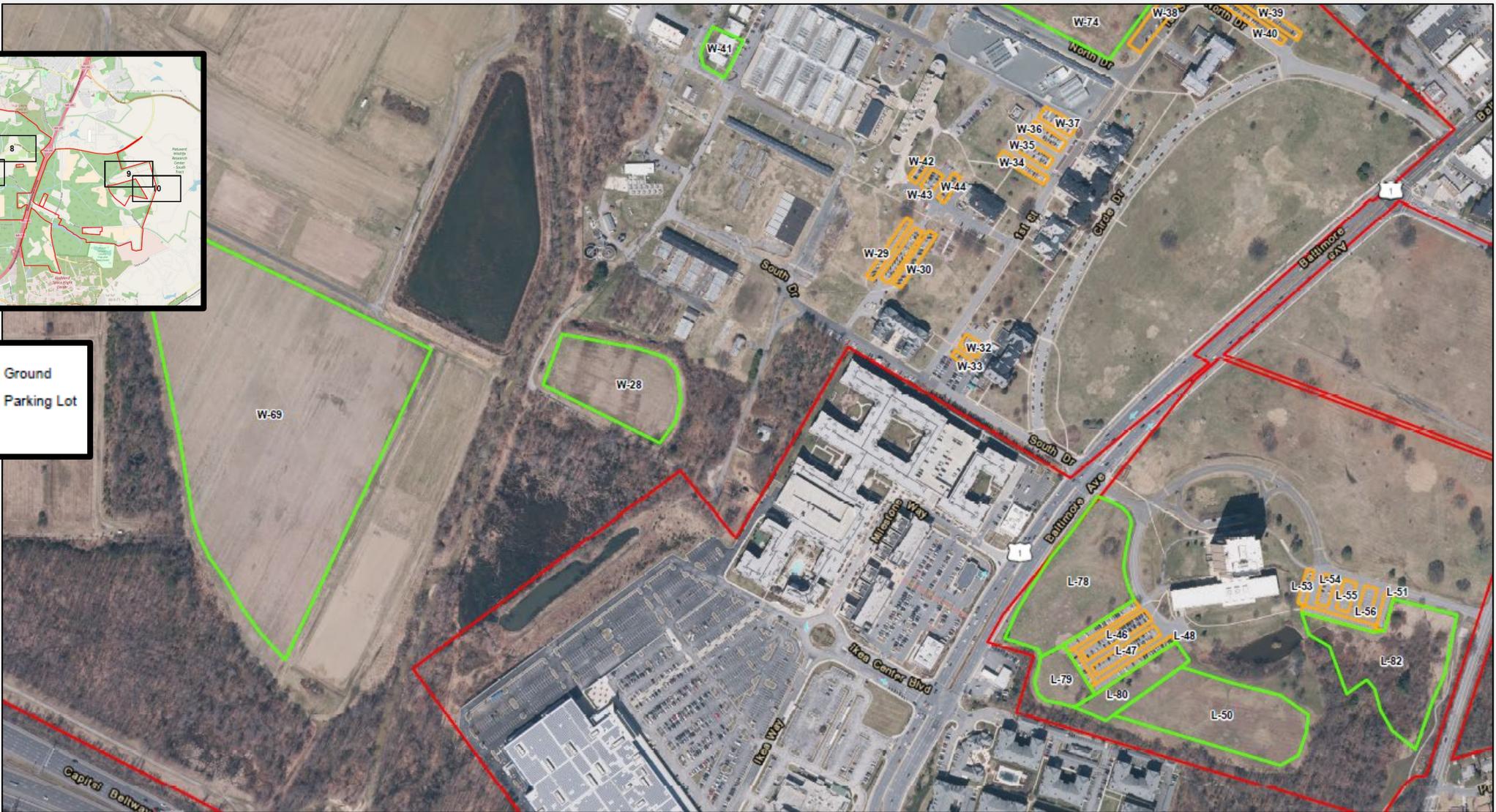
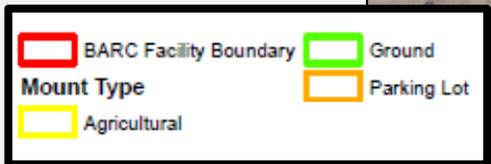
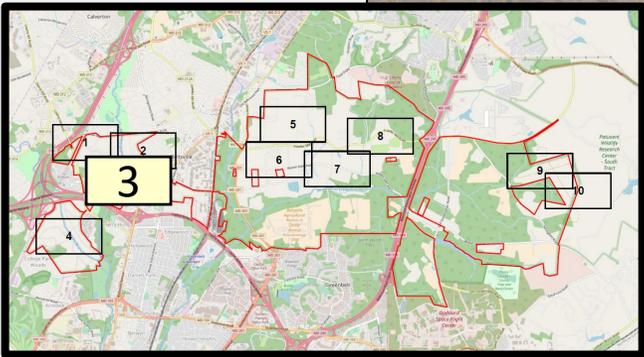
Potential Installation Area 1



	BARC Facility Boundary		Ground
	Mount Type		Parking Lot
	Agricultural		



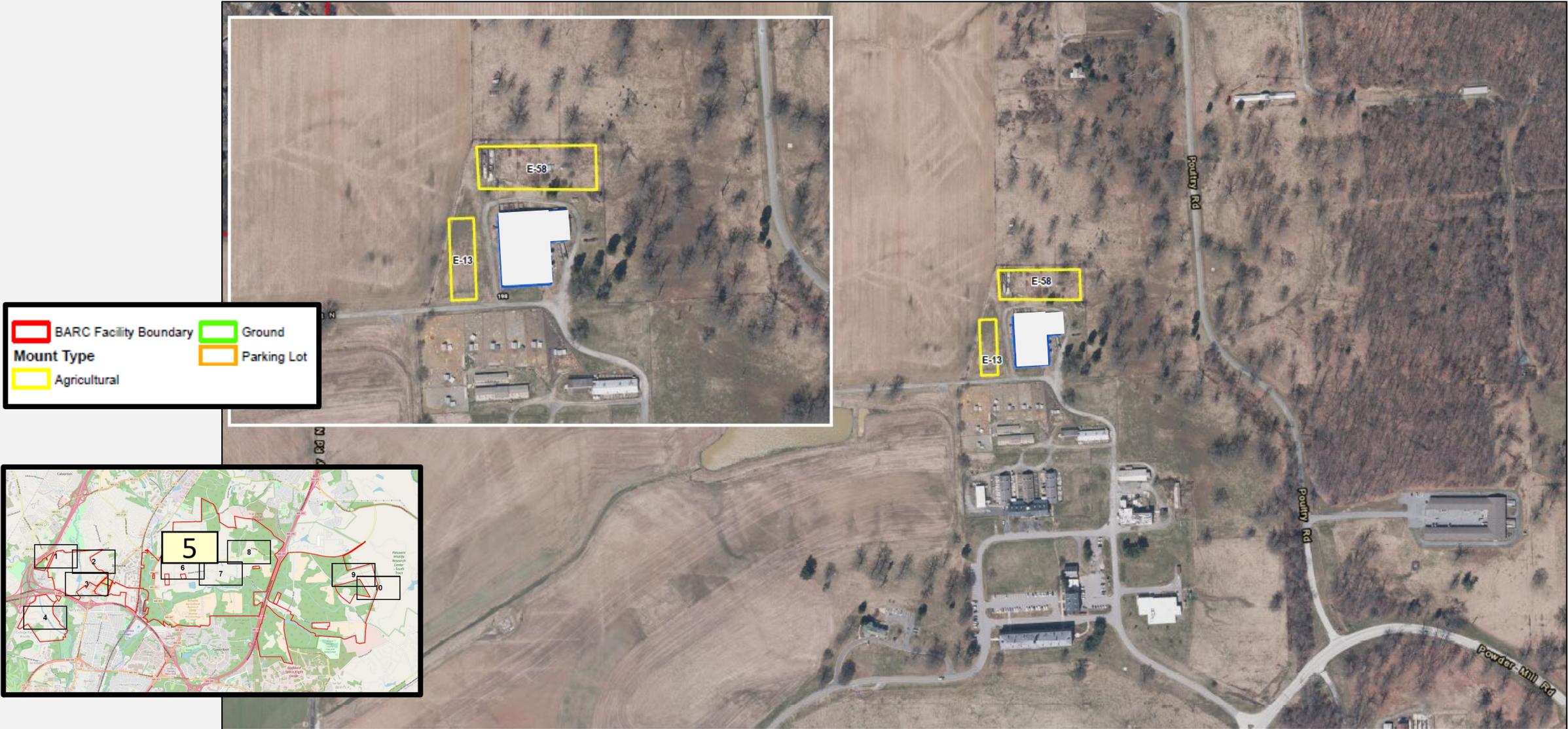
Potential Installation Area 3



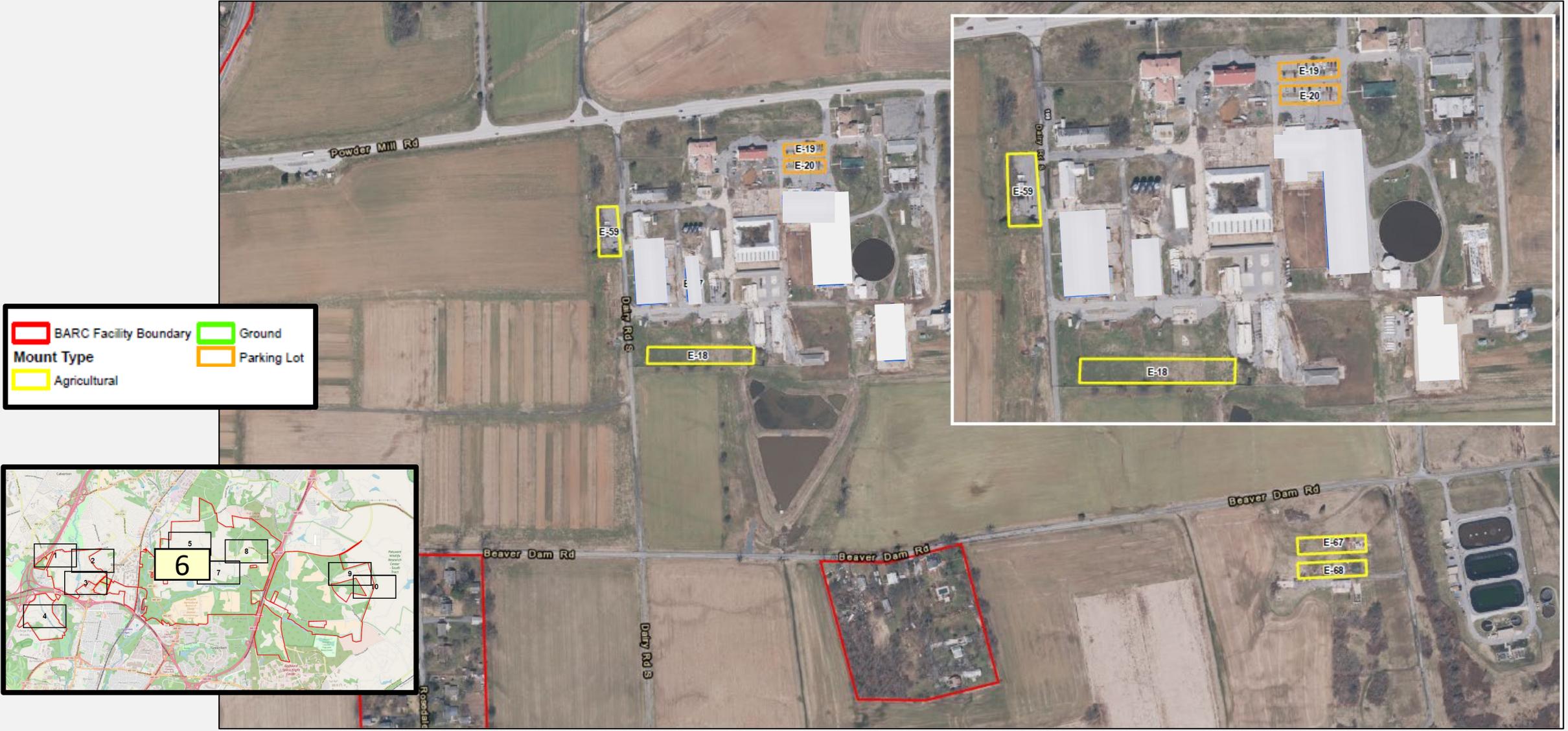
Potential Installation Area 4



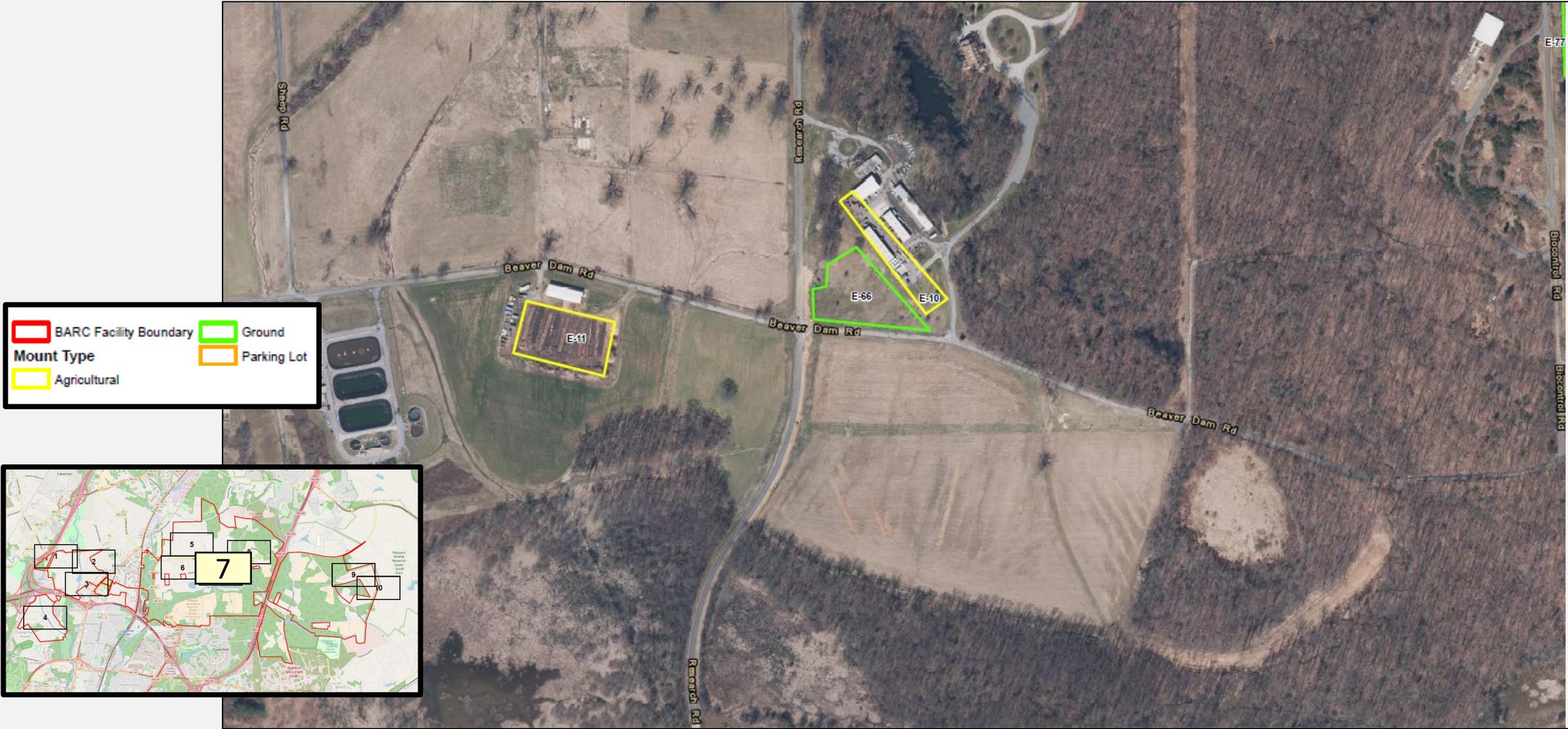
Potential Installation Area 5



Potential Installation Area 6



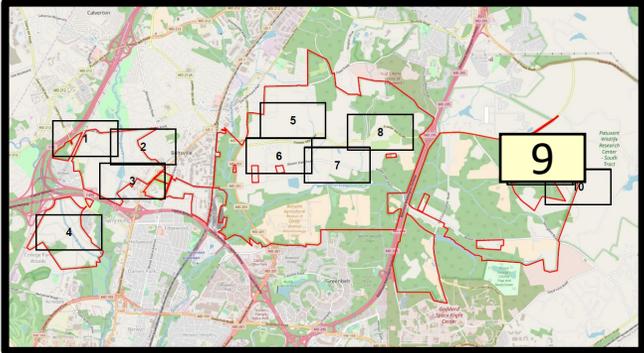
Potential Installation Area 7



Potential Installation Area 8



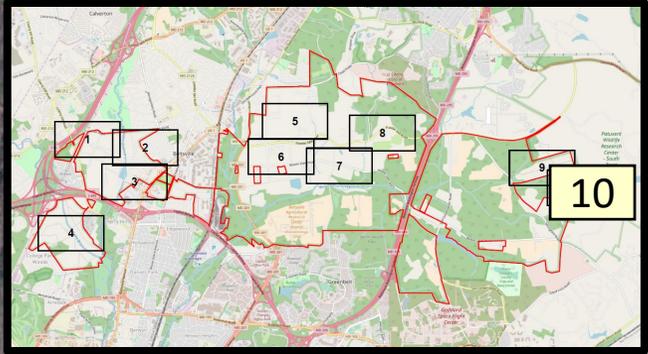
Potential Installation Area 9



 BARC Facility Boundary	 Ground
 Agricultural	 Parking Lot



Potential Installation Area 10



	BARC Facility Boundary		Ground
	Agricultural		Parking Lot