AGENDA
JAMES CITY COUNTY BOARD OF SUPERVISORS
REGULAR MEETING
COUNTY GOVERNMENT CENTER BOARD ROOM
101 MOUNTS BAY ROAD, WILLIAMSBURG, VA 23185
February 11, 2025
5:00 PM

A. CALL TO ORDER

B. ROLL CALL

C. MOMENT OF SILENCE

D. PLEDGE OF ALLEGIANCE

1. Pledge Leader - Josiah Robinson, 3rd grade student at Norge Elementary and a resident of the Jamestown District

E. PRESENTATIONS

1. James City County Police Department K9s
2. Life-saving Recognition
3. Fire Department Rescue Recognition

F. PUBLIC COMMENT

G. CONSENT CALENDAR

H. PUBLIC HEARING(S)

1. AFD-24-0004, 120 & 121 Ivy Hill Road, Mill Creek AFD Withdrawal
2. SUP-24-0016, 120 & 121 Ivy Hill Road--Hedera Solar Facility

I. BOARD CONSIDERATION(S)

J. BOARD REQUESTS AND DIRECTIVES

K. REPORTS OF THE COUNTY ADMINISTRATOR

L. CLOSED SESSION

1. Consideration of personnel matter, the appointment of individuals to County Boards and/or Commissions, pursuant to Section 2.2-3711 (A)(1) of the Code of Virginia
    a. Planning Commission
2. Certification of Closed Session

M. ADJOURNMENT

1. Adjourn until 1 pm on February 25, 2025 for the Business Meeting

SUMMARY FACTS

Applicant:	Ms. Ester Rekhelman, Hexagon Energy, LLC
Landowners:	Ivy Hill LLC and Barbara Silverman (care of Ellen Lightman), Ellen Lightman
Proposal:	Withdrawal of ± 60.6 acres from the Mill Creek Agricultural and Forestal District (AFD)
Locations:	101 Ivy Hill Road 121 Ivy Hill Road
Tax Map/Parcel Nos.:	1110100013 1110100024
Project Acreage:	± 60.6 acres
Zoning:	A-1, General Agricultural
Comprehensive Plan:	Rural Lands
Primary Service Area:	Outside
Staff Contact:	Roberta Sulouff, Senior Planner

PUBLIC HEARING DATES

AFD Advisory Committee:	October 17, 2024, 4:00 p.m.
Planning Commission:	January 8, 2025, 6:00 p.m.
Board of Supervisors:	February 11, 2025, 5:00 p.m.

FACTORS FAVORABLE

1. The request would not cause damage or disruption to the existing District.

FACTORS UNFAVORABLE

1. The request does not fully meet all four criteria set forth in the Board of Supervisors' policy.

AFD ADVISORY COMMITTEE RECOMMENDATION

At its October 17, 2024, meeting, the AFD Advisory Committee voted unanimously to recommend denial of this application to the Planning Commission and the Board of Supervisors.

PLANNING COMMISSION RECOMMENDATION

At its January 8, 2025, meeting, the Planning Commission voted 6-1 to recommend approval of this withdrawal application to the Board of Supervisors.

CHANGES SINCE THE PLANNING COMMISSION MEETING

None.

SUMMARY STAFF RECOMMENDATION

The adopted Board of Supervisors' policy governing withdrawal of property from AFDs states that "it is the policy of the Board to discourage the withdrawal of properties from AFDs during the terms of those districts." This withdrawal request was submitted outside of the renewal period for the Mill Creek AFD. Staff cannot support this request for withdrawal as it does not meet all four of the recommended criteria.

DISTRICT HISTORY

- The Mill Creek AFD was created in 1986 for a term of four years and originally consisted of 28 parcels totaling ± 3,547 acres.

- The District was renewed at four-year intervals again in 1990, 1994, 1998, 2002, 2006, 2010, 2014, 2018, and 2022 with various additions and withdrawals taking place during that period.

- If this withdrawal is approved, the District would consist of approximately 3,345.51 acres (accounting for the most recent addition to the District, approved in July 2024).

WITHDRAWAL REQUESTS/WITHDRAWAL ANALYSIS

Ms. Ester Rekhelman of Hexagon Energy, LLC, has requested to withdraw approximately 60.6 acres of land (out of a total 101.36 acres) located at 101 and 121 Ivy Hill Road from the Mill Creek AFD. The applicant has also applied for a Special Use Permit to permit a 3-megawatt solar facility at this site. The site has been used for industrial timbering for over 60 years, with its last clearing occurring in 2022.

On September 28, 2010, the Board of Supervisors adopted a policy and withdrawal criteria for AFD parcels outside of renewal periods. That policy is enclosed (Attachment No. 4) and the withdrawal criteria are listed below with staff comments following in italics. Staff's review of the policy is based on precedent and direction from the Board of Supervisors.

A. The request is caused by a change in circumstances that could not have been anticipated at the time the application was made for inclusion in the District.

   Historically, a change in circumstances has been interpreted to include "death of a property owner," as stated in the State Code, but has not included new opportunities for development of a property. The proposed use does not meet this criterion.

B. The request would serve a public purpose, as opposed to the proprietary interest of the landowner that could not otherwise be realized upon expiration of the AFD.

   This criterion has generally been interpreted to allow for the withdrawal of land for the provision of a public facility, such as a school or fire station. The proposed use does not meet this criterion.

C. The request would not cause damage or disruption to the existing District.

   With this withdrawal, the District will continue to meet minimum acreage requirements. This proposal also leaves the remaining ± 40.46 acres of the combined properties within the Mill Creek AFD, therefore the request meets this criterion.

D. If the request for withdrawal is in conjunction with a proposal to convert the land use of a property to a different use than is currently in place, the new land use would be in conformance with the Comprehensive Plan.

   The Comprehensive Plan designates this parcel as Rural Lands. Rural Lands are intended to help protect and enhance the viability of agricultural and forestal resources and compatible rural economic development uses as important components of the local economy. Staff finds that the proposed use could be compatible provided that appropriate conditions are in place.

SURROUNDING ZONING AND DEVELOPMENT

	ZONING DESIGNATION	EXISTING LAND USE	FUTURE LAND USE DESIGNATION
NORTH	A-1, General Agricultural	US 60; Single-family residential, undeveloped-forested land and Commercial	Rural Lands
SOUTH	A-1, General Agricultural	Single-family residential, undeveloped-forested land	Rural Lands
EAST	A-1, General Agricultural	Single-family residential, undeveloped-forested land and Commercial	Rural Lands
WEST	A-1, General Agricultural	Church	Rural Lands

This project is located approximately one mile west of Richmond Road Solar, a solar facility approved by the Board of Supervisors in October 2023.

STAFF RECOMMENDATION

The adopted Board of Supervisors' policy governing withdrawal of property from AFDs states that "it is the policy of the Board to discourage the withdrawal of properties from AFDs during the terms of those districts." This withdrawal request was submitted outside of the renewal period for the Mill Creek AFD. Staff cannot support this request for withdrawal as it does not meet all four of the criteria set forth in the Board's policy.

RS/ap
AFD24-4IvyHllWD

Attachments:
1. Resolution
2. Location Map
3. Mill Creek AFD Map
4. Mill Creek AFD 2022 Renewal Ordinance
5. Policy Governing the Withdrawals of Property from AFDs
6. AFD Withdrawal Request Letter and Exhibit Depicting AFD Withdrawal Area
7. Unapproved Minutes of the October 17, 2024, AFD Advisory Committee

ORDINANCE NO._____

AGRICULTURAL AND FORESTAL DISTRICT-24-0004.

AMENDMENT OF ORDINANCE NO. 169A-21:

120 AND 121 IVY HILL ROAD AFD WITHDRAWAL

WHEREAS, a request has been filed with the Board of Supervisors of James City County, Virginia (the "Board"), to withdraw ± 60.6 acres of land as shown on a plan titled "Hedera Solar - Impacted Area" prepared by Hexagon Energy, LLC, and dated September 13, 2024, from the Mill Creek Agricultural and Forestal District (AFD), which is currently ± 3,406.11 acres (the "Application"); and

WHEREAS, the ± 60.6 acres subject to the Application is a portion of the +/- 101.36-acre property owned by Ivy Hill, LLC, Barbara Silverman, and Ellen Lightman located at 101 and 121 Ivy Hill Road and identified as James City County Real Estate Tax Map Parcel Nos. 1110100013 and 1110100024 (the "Property"); and

WHEREAS, at its October 17, 2024, meeting, the AFD Advisory Committee voted 7-0 to recommend approval of the Application; and

WHEREAS, a public hearing was advertised and held by the Planning Commission (the "Commission") at its January 8, 2025, meeting, pursuant to Section 15.2-4314 of the Code of Virginia, 1950, as amended (the "Virginia Code"), after which the Commission voted 6-1 to recommend approval of the Application; and

WHEREAS, pursuant to Sections 15.2-1427 and 15.2-4309 of the Virginia Code, a public hearing was advertised and held by the Board; and

WHEREAS, the Board finds that the withdrawal request meets the criteria set forth in the Board's Withdrawal Policy for Agricultural and Forestal Districts, dated September 28, 2010.

NOW, THEREFORE, BE IT ORDAINED by the Board of Supervisors of James City County, Virginia, that Ordinance No. 169A-21 is hereby amended to remove ± 60.6 acres owned by Ivy Hill, LLC, Barbara Silverman, and Ellen Lightman, as referenced herein, from the Mill Creek Agricultural and Forestal District.

_____
James O. Icenhour, Jr.
Chair, Board of Supervisors

ATTEST:

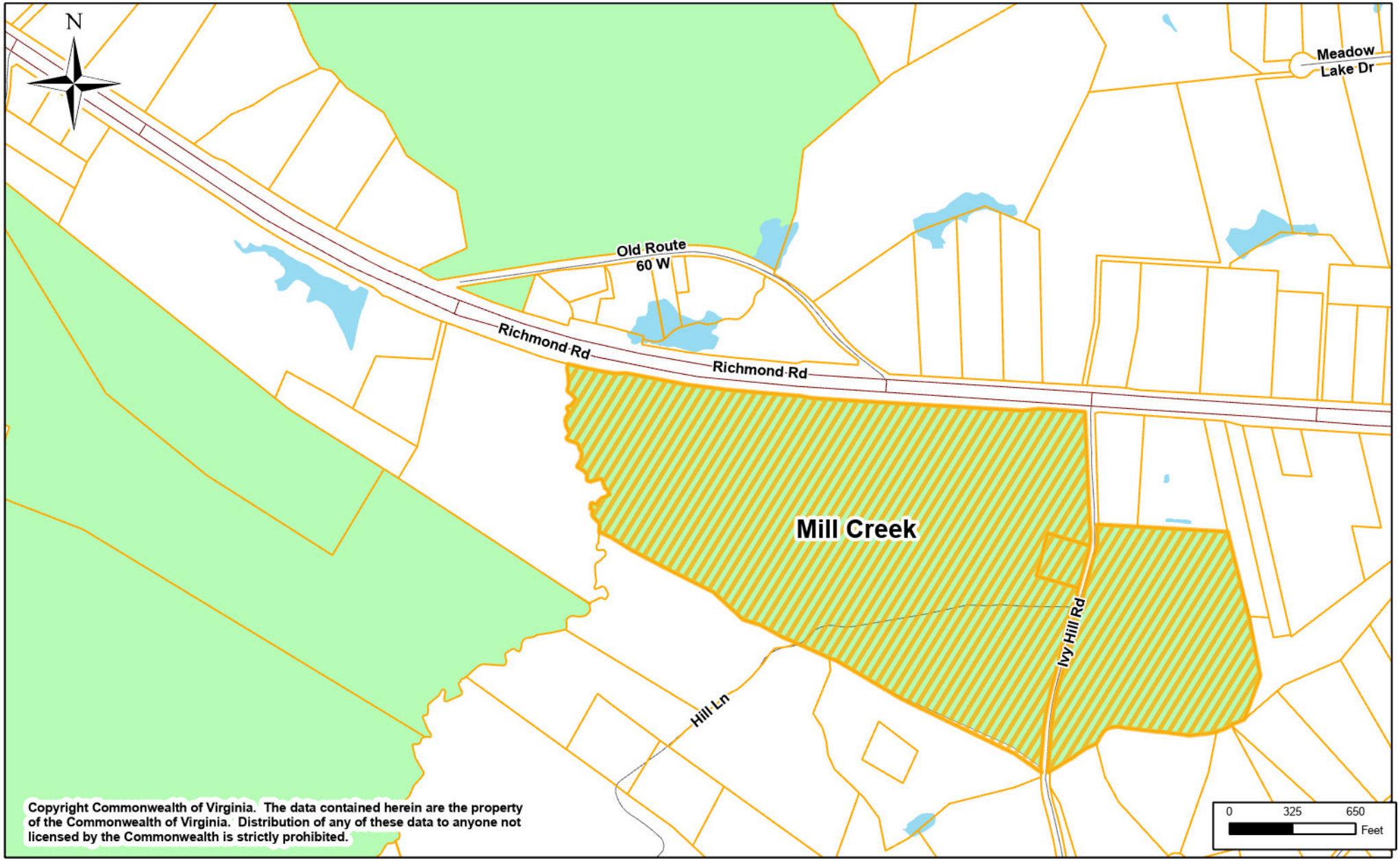
_____
Teresa J. Saeed
Deputy Clerk to the Board

	VOTES			
	AYE	NAY	ABSTAIN	ABSENT
HIPPLE	____	____	____	____
NULL	____	____	____	____
LARSON	____	____	____	____
MCGLENNON	____	____	____	____
ICENHOUR	____	____	____	____

Adopted by the Board of Supervisors of James City County, Virginia, this 11th day of February, 2025.

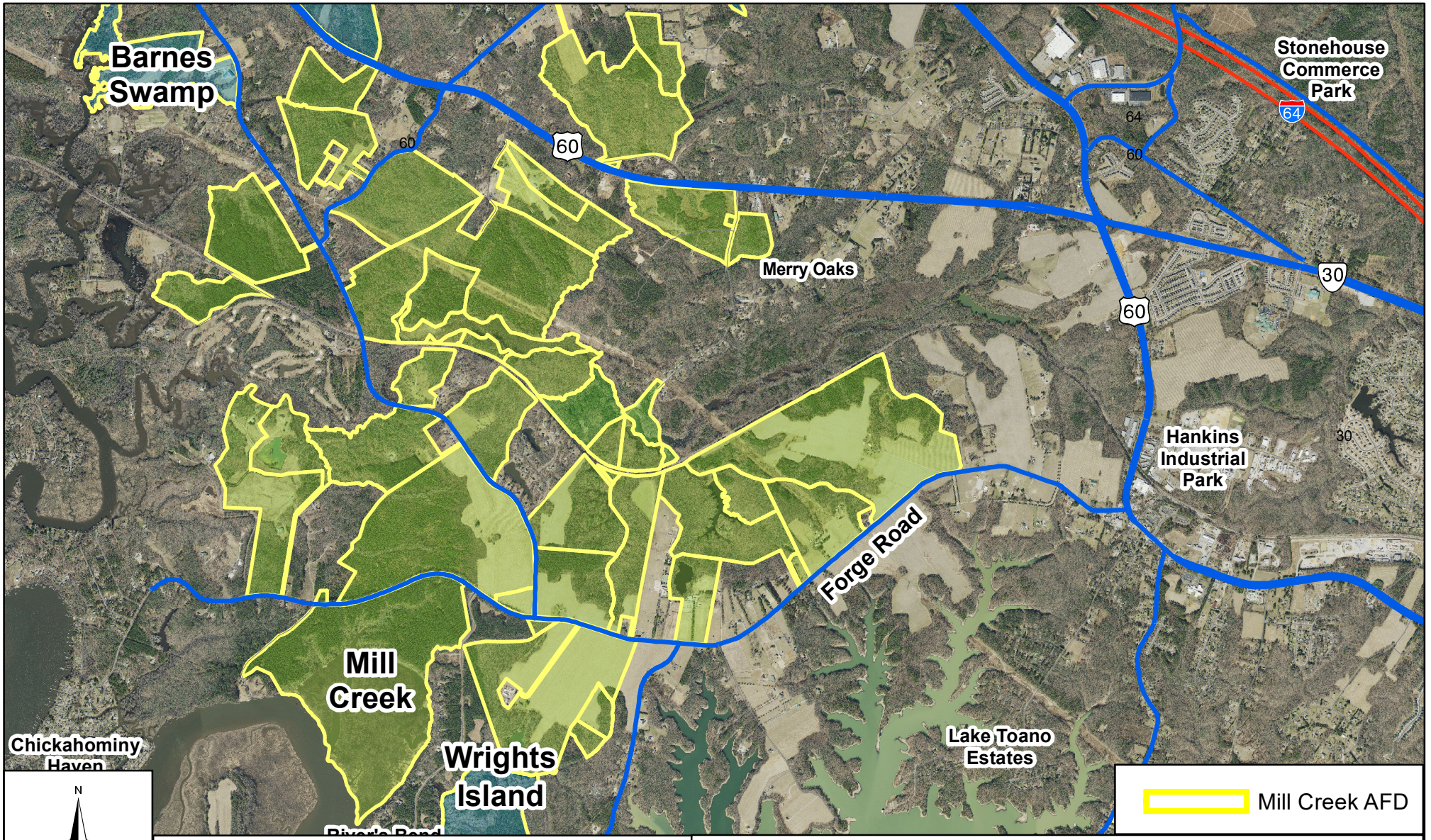
AFD24-4IvyHllWD-ord

JCC-AFD-24-0004
101 & 121 Ivy Hill Road
Mill Creek AFD Withdrawal



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JCC AFD-22-0011
Mill Creek Agricultural Forestal District



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ADOPTED

SEP 13 2022

Board of Supervisors
James City County, VA

ORDINANCE NO. 169A-21

AGRICULTURAL AND FORESTAL DISTRICT-22-0011

MILL CREEK 2022 RENEWAL

WHEREAS, James City County has completed a review of the Mill Creek Agricultural and Forestal District (the "District"); and

WHEREAS, in accordance with Section 15.2-4311 of the Code of Virginia, 1950, as amended (the "Virginia Code"), property owners have been notified, public notices have been filed, public hearings have been advertised, and public hearings have been held on the continuation of the District; and

WHEREAS, the Agricultural and Forestal District (AFD) Advisory Committee at its meeting on July 21, 2022, voted 6-0 to recommend renewal of the District; and

WHEREAS, the Planning Commission following its public hearing on August 3, 2022, concurred with the recommendation of staff and the AFD Advisory Committee and voted 7-0 to recommend renewal of the District with the conditions listed below.

NOW, THEREFORE, BE IT ORDAINED by the Board of Supervisors of James City County, Virginia, that:

1. The Mill Creek Agricultural and Forestal District (the "District") is hereby continued to October 31, 2026, in accordance with the provisions of the Virginia Agricultural and Forestal District Act, Virginia Code Section 15.2-4300 et. seq. (the "Act").

2. That the District shall include the following parcels, provided, however, that all land within 25 feet of road rights-of-way is excluded from the District:

LAND OWNERS	PARCEL ID	ACRES
8700 Barnes Road LLC	1010100037	104.00
Abbitt, M.W. Family Partnership	920100040	95.51
Albert T. & Joan Lloyd Slater	1010100028	69.69
Christopher M. Ware	920100036	39.13
Cowles-Cowlesville LLC	1040100005	249.89
Cowles-Cowlesville LLC	1040100006	124.77
Cowles-Cowlesville LLC	2010100002	2.00
Cowles-Lobbs LLC	2020100006	352.96
Dale Cowles Henderson & John Cowles Dozier, et al.	2020100001	8.76
Dale Cowles Henderson & John Cowles Dozier, et al.	2020100003	102.67
Daniel R. Winall & Marion Virginia	1030100019	97.59
Dennis P. and Christine A. Weygand	1030100013	34.03
Edwards' Mill Pond, LLC	1030100003	45.80
Ivy Hill LLC & Barbara L. Silverman c/o Ellen Lightman	1110100013	100.18

Ivy Hill LLC c/o Ellen Lightman	1110100024	1.18
J. Michael Sim	1040100003	103.26
J. Michael Sim	1040100001A	10.00
John E. & Elaine M. Sharp	0940100008N	57.81
John G. & Marie Antionette Findlay	0940100008H	118.29
John M. L. Barnes Estate	1110100001	29.00
John M.L. Barnes Estate & James F. Cowles	1020100004	215.77
Mark M. & Michelle B. Massie	1130100028B	29.43
Martha Ware Trust	2020100002	57.41
Mary M. Selph	1010100007	50.00
Mayes D. & Cheryl M. Matthews	2110100005	46.01
Nancy Cottrell Kruse & M. Anderson Bradshaw	1140100002	153.00
Pamaka LLC	1020100017	242.70
Pamela C. & Steve L. Massie	1130100028	102.06
Ralph Benjamin Dozier, Charles Norris Dozier III & Mary Elizabeth Sink	2020100005	178.44
Ralph Benjamin Dozier, Charles Norris Dozier III & Mary Elizabeth Sink	2020100007	16.50
Ralph Benjamin Dozier, Charles Norris Dozier III & Mary Elizabeth Sink	2020100008	12.00
Randolph G. & Michelle H. Gulden	1020100012	62.20
Randolph G. & Michelle H. Gulden	1020100032	25.00
Richard W. & Margaret Krapf	1140100006	4.73
Sarah Armistead	1010100038	50.00
Walter Nelson Marshall, III Trustee	1140100005	79.95
WGJ Land Holdings LLC	1040100004	43.07
WGJ Land Holdings LLC	1130100011	14.85
WGJ Land Holdings LLC	1130100011A	2.81
TOTAL ACRES		3,132.45

3. That pursuant to Section 15.2-4309 of the Act, The Board of Supervisors requires that any parcel in the District shall not, without the prior approval of the Board of Supervisors, be developed to any more intensive use, other than uses resulting in more intensive agricultural or forestal production. Specifically, the following restrictions shall apply:

   a. The subdivision of land is limited to 25 acres or more, except where the Board of Supervisors authorizes smaller lots to be created for residential use by members of the owner's immediate family, as defined in the James City County Subdivision Ordinance. Parcels of up to five acres, including necessary access roads, may be subdivided for the siting of Wireless Communications Facilities (WCF), provided: a) the subdivision does not result in the total acreage of the District to drop below 200 acres; and b) the subdivision does not result in a remnant parcel of less than 25 acres.

b. Land within the District may be withdrawn from the District in accordance with the Board of Supervisors' Policy Governing the Withdrawal of Properties from Agricultural and Forestal Districts, adopted September 28, 2010.

c. No Special Use Permit (SUP) shall be issued except for agricultural, forestal, or other activities and uses consistent with the Act, which are not in conflict with the policies of this District. The Board of Supervisors, at its discretion, may issue SUPs for WCFs on properties in the District that are in accordance with the County's policies and Ordinances regulating such facilities.

John J. McGlennon
Chairman, Board of Supervisors

ATTEST:

Teresa J. Saeed
Deputy Clerk to the Board

	VOTES			
	AYE	NAY	ABSTAIN	ABSENT
ICENHOUR	✓			
HIPPLE	✓			
LARSON	✓			
SADLER	✓			
MCGLENNON	✓			

Adopted by the Board of Supervisors of James City County, Virginia, this 13th day of September, 2022.

AFD22-11MillCrkRen-res

RESOLUTION

POLICY GOVERNING THE WITHDRAWALS OF PROPERTY FROM AGRICULTURAL AND FORESTAL DISTRICTS (AFDs)

WHEREAS, the Board of Supervisors has determined that Agricultural and Forestal Districts (AFDs) are a valuable tool to help protect the agricultural and forestal lands and industry in James City County; and

WHEREAS, premature withdrawals of land from the Districts is contrary to the intent of the Board in allowing the establishment of these Districts.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, hereby establishes the following policy relating to the withdrawal of lands from AFDs during the terms of those Districts. This policy in no way supersedes the provisions for withdrawal by right under Sections 15.2-4311 or 15.2-4314D of the Code of Virginia.

1. It is the policy of the Board of Supervisors to discourage the withdrawal of properties from AFDs during the terms of those districts.
2. The criteria for withdrawal during the terms of the districts are as follows:

   In order to establish "good and reasonable cause," a landowner requesting to withdraw property from an AFD must submit written information to demonstrate compliance with the following criteria:

   A. The request is caused by a change in circumstances that could not have been anticipated at the time application was made for inclusion in the district.
   B. The request would serve a public purpose, as opposed to the proprietary interest of the landowner that could not otherwise be realized upon expiration of the AFD.
   C. The request would not cause damage or disruption to the existing district.
   D. If the request for withdrawal is in conjunction with a proposal to convert the land use of a property to a different use than is currently in place on the property, the new land use would be in conformance with the Comprehensive Plan.

   The Board shall weigh each of the above criteria in its deliberation, but may also use whatever other criteria as it deems appropriate for the individual case.

James G. Kennedy
Chairman, Board of Supervisors

SUPERVISOR	VOTE
MCGLENNON	AYE
GOODSON	AYE
ICENHOUR	AYE
JONES	AYE
KENNEDY	AYE

ATTEST:

Robert C. Middaugh
Clerk to the Board

Adopted by the Board of Supervisors of James City County, Virginia, this 28th day of September, 2010.

AFDsPolWdraw_res

HEXAGON
ENERGY

Paul Holt
101 Mounts Bay Road
Building A
Williamsburg, VA 23185

Re: 101 and 121 Ivy Hill Rd Partial AFD Withdrawal Request

Greetings Mr. Holt,

On behalf of Hedera Solar, LLC, we would like to request that a 60.6-acre portion of property owned by Ivy Hill, LLC and Barbara L. Silverman (Property IDs 1110100013 and 1110100024), be withdrawn from the Mill Creek Agricultural & Forestal District (AFD). In order to establish good and reasonable cause for the proposed withdrawal, we demonstrate below compliance with the required criteria outlined in the Policy Governing the Withdrawals of Property from Agricultural and Forestal Districts (AFDs).

A. **The request is caused by a change in circumstances that could not have been anticipated at the time application was made for inclusion in the district.**

The Mill Creek district was continued for a four-year term beginning in 2022. This renewal occurred prior to initial conversation, and execution of the agreements allowing for the development of a proposed solar project to begin.

B. **The request would serve a public purpose, as opposed to the proprietary interest of the landowner that could not otherwise be realized upon expiration of the AFD.**

If approved, this withdrawal request would allow for the consideration of a Special Use Permit for a 3 MW_{AC} solar energy facility. The Virginia Clean Economy Act is legislation enacted in 2020 that sets the Commonwealth on a path to source its energy mix from 100% carbon-free sources by the year 2050, with an interim goal of constructing a number of small solar facilities across Dominion Energy's service territory by 2035. Installation of small-scale solar projects provide the

321 E. Main St. | Suite 500 | Charlottesville, VA 22902
P 434.227.5090 hexagon-energy.com

community with locally sourced, clean energy. Small distributed solar generators reduce the distance between power generation and consumption, thereby improving grid resiliency.

The project is subject to Virginia interconnection regulations and Dominion Energy's interconnection process. The project has a mid-year 2025 interconnection deadline that, due to Virginia Regulations, cannot be suspended or delayed. The deadline requires the project to either move forward with an Interconnection Service Agreement and begin Interconnection Construction Planning or terminate. Therefore, the withdrawal from the AFD must occur prior to the end of 2024 to allow the project to apply for a Special Use Permit, meet the interconnection deadline and move forward.

C. **The request would not cause damage or disruption to the existing district.**

The request to remove 60.6 acres from the AFD represents 1.59% of the 3,799.55-acre Mill Creek AFD, and 0.32% of the larger 18,646-acre total AFD area. Approving the withdrawal of 60.6 acres would allow the AFD to remain well above the requisite 200-acre minimum identified in the Mill Creek Renewal document.

D. **If the request for withdrawal is in conjunction with a proposal to convert the land use of a property to a different use than is currently in place on the property, the new land use would be in conformance with the Comprehensive Plan**

The request for withdrawal is in conjunction with a proposal to convert the land use. Concurrent with this request, Hedera Solar, LLC will submit a Special Use Permit application request that demonstrates the proposed new land use is in conformance with the Comprehensive Plan. Virginia Code 15.2-2232 requires solar energy facilities be found in substantial accord with the locality's adopted Comprehensive Plan prior to construction. Hedera Solar's Special Use Permit application request includes a detailed analyses of how the approximate location, character, and extent thereof are in substantial accord with James City County's *Toward 2045: Leading the Way* Comprehensive Plan, pursuant to VAC15.2-2232.

There was an initial AFD-Withdrawal request made on 07/08/2024 for 47.5 acres that was withdrawn and increased to 60.6 acres of withdrawn area. The reason for this is that after speaking

HEXAGON
ENERGY

to Principal Planner Josh Crump, who was overseeing our case, he recommended we increase our withdrawal area to accommodate potential additional stormwater mitigation that may be added later down the line before construction. We took this suggestion, so while most of that area is currently not planned for the solar development, we wanted to withdraw it to provide for additional stormwater mitigation land if it be needed. If certain area is not used for the solar facility or stormwater facilities related to the solar facility, it can be resubmitted into the AFD.

We appreciate your consideration of this request. To aid in discussion of this proposal, we have attached an updated conceptual plan of Hedera Solar, the proposed project that would occupy the withdrawn acreage.

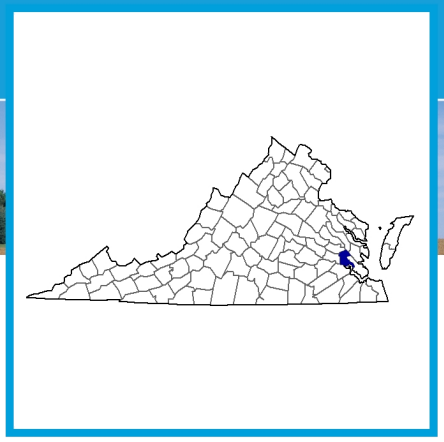
Respectfully yours,

Ester Rekhelman

Ester Rekhelman
Project Developer
Hedera Solar, LLC
Hexagon Energy, LLC
(434) 218-0595
ERekhelman@Hexagon-Energy.com

2022 CENSUS OF AGRICULTURE *County Profile*





James City County
Virginia

Total and Per Farm Overview, 2022 and change since 2017

	2022	% change since 2017
Number of farms	79	+10
Land in farms (acres)	6,216	-6
Average size of farm (acres)	79	-15
Total	($)	
Market value of products sold	2,216,000	+8
Government payments	(D)	(D)
Farm-related income	1,144,000	+23
Total farm production expenses	4,472,000	-32
Net cash farm income	-1,060,000	+70
Per farm average	($)	
Market value of products sold	28,055	-1
Government payments [a]	(D)	(D)
Farm-related income [a]	45,780	+28
Total farm production expenses	56,610	-38
Net cash farm income	-13,420	+73

(Z) Percent of state agriculture sales

Share of Sales by Type (%)

Crops	78
Livestock, poultry, and products	22

Land in Farms by Use (acres)

Cropland	2,381
Pastureland	587
Woodland	2,262
Other	986

Acres irrigated: 63

1% of land in farms

Land Use Practices (% of farms)

No till	18
Reduced till	3
Intensive till	10
Cover crop	8

Farms by Value of Sales

	Number	Percent of Total [b]
Less than $2,500	40	51
$2,500 to $4,999	-	-
$5,000 to $9,999	10	13
$10,000 to $24,999	7	9
$25,000 to $49,999	12	15
$50,000 to $99,999	6	8
$100,000 or more	4	5

Farms by Size

	Number	Percent of Total [b]
1 to 9 acres	14	18
10 to 49 acres	31	39
50 to 179 acres	23	29
180 to 499 acres	10	13
500 to 999 acres	-	-
1,000+ acres	1	1

2022 CENSUS OF AGRICULTURE *County Profile*

Market Value of Agricultural Products Sold

	Sales ($1,000)	Rank in State [c]	Counties Producing Item	Rank in U.S. [c]	Counties Producing Item
Total	**2,216**	**93**	**98**	**2,968**	**3,078**
Crops	**1,726**	**91**	**97**	**2,778**	**3,074**
Grains, oilseeds, dry beans, dry peas	(D)	(D)	97	(D)	2,917
Tobacco	-	-	25	-	267
Cotton and cottonseed	-	-	12	-	647
Vegetables, melons, potatoes, sweet potatoes	213	59	96	1,452	2,831
Fruits, tree nuts, berries	612	32	94	781	2,711
Nursery, greenhouse, floriculture, sod	143	64	95	1,411	2,660
Cultivated Christmas trees, short rotation woody crops	(D)	28	54	(D)	1,274
Other crops and hay	(D)	76	96	(D)	3,035
Livestock, poultry, and products	**490**	**88**	**98**	**2,896**	**3,076**
Poultry and eggs	(D)	88	97	(D)	3,027
Cattle and calves	(D)	85	96	(D)	3,047
Milk from cows	297	42	57	874	1,770
Hogs and pigs	-	-	91	-	2,814
Sheep, goats, wool, mohair, milk	-	-	93	-	2,967
Horses, ponies, mules, burros, donkeys	-	-	86	-	2,907
Aquaculture	-	-	38	-	1,190
Other animals and animal products	98	25	91	972	2,909

Producers [d] 165

Sex
Male	105
Female	60

Age
<35	14
35 – 64	97
65 and older	54

Race
American Indian/Alaska Native	-
Asian	-
Black or African American	21
Native Hawaiian/Pacific Islander	-
White	144
More than one race	-

Other characteristics
Hispanic, Latino, Spanish origin	-
With military service	32
New and beginning farmers	69

Percent of farms that:

Have internet access	**80**
Farm organically	**-**
Sell directly to consumers	**13**
Hire farm labor	**30**
Are family farms	**90**

Top Crops in Acres [e]

Forage (hay/haylage), all	966
Corn for grain	(D)
Soybeans for beans	(D)
Grapes	(D)
Vegetables harvested, all	37

Livestock Inventory (Dec 31, 2022)

Broilers and other meat-type chickens	36
Cattle and calves	732
Goats	3
Hogs and pigs	(D)
Horses and ponies	278
Layers	170
Pullets	-
Sheep and lambs	40
Turkeys	-

[a] Average per farm receiving. [b] May not add to 100% due to rounding. [c] Among counties whose rank can be displayed. [d] Data collected for a maximum of four producers per farm. [e] Crop commodity names may be shortened; see full names at www.nass.usda.gov/go/cropnames.pdf. [f] Position below the line does not indicate rank. (D) Withheld to avoid disclosing data for individual operations. (NA) Not available. (Z) Less than half of the unit shown. (-) Represents zero.

USDA is an equal opportunity provider, employer, and lender.

Original Signature EnerGov

The applicant and property owner for all legislative case requests must submit an original signature of consent or the application will not be processed.

(Legislative cases include the following: Rezoning, Master Plan, Special Use Permit, Height Waiver, Land Use Change, Board of Zoning Appeals and Agricultural and Forestal District.)

Project Information

Case Type: Special Use Permit and Agricultural Forestal District Withdrawal

Online Case Submission Date: 07/08/2024

Project Name: Hedera Solar, LLC

Address: 101 Ivy Hill Rd, 121 Ivy Hill Rd

Tax Map and Parcel ID: 1110100013, 1110100024

Applicant/Contact Information

Name: Ester Rekhelman

Company: Hexagon Energy, LLC

Phone: 434.218.0595

Address: 321 East Main Street Suite 500 Charlottesville, VA 22902

Email: erekhelman@hexagon-energy.com

Property Owner Information

Name: Ivy Hill, LLC and Barbara Silverman

Company:

Phone:

Address: 5 FARRINGDON CT BALTIMORE, MD 212092507

Email:

I (We), the undersigned do hereby make application and petition the applicable governing body of James City County, Virginia, to consider the above request. All applicable submittal requirements and documentation has been submitted online as Case No.: _____.

Applicant Signature: E. Rekhelman Date: 07/03/2024

Property Owner Signature: Ellen Brightman, Ivy Hill, LLC Date: June 27, 2024

Property Owner Signature: _____ Date: _____

Original Signature EnerGov

The applicant and property owner for all legislative case requests must submit an original signature of consent or the application will not be processed.

(Legislative cases include the following: Rezoning, Master Plan, Special Use Permit, Height Waiver, Land Use Change, Board of Zoning Appeals and Agricultural and Forestal District.)

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Company: _____

Phone: _____

Address: 5 FARRINGDON CT BALTIMORE, MD 212092507

Email: _____

I (We), the undersigned do hereby make application and petition the applicable governing body of James City County, Virginia, to consider the above request. All applicable submittal requirements and documentation has been submitted online as Case No.: _____.

Applicant Signature: E. Rekhelman Date: 07/03/2024

Property Owner Signature: Barbara L. Silv Date: 06/21/2024

Property Owner Signature: _____ Date: _____



LEGEND

- PARCEL BOUNDARY
- PROPOSED FENCE AREA
- IMPACTED AREA

HEXAGON ENERGY

HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
Charlottesville, VA 22902
Phone: 434.227.5090
Website: www.hexagon-energy.com

Professional Engineer:

PE Seal:

DRAWING TYPE

☐ Preliminary	☐ Construction
☐ Customer Approval	☐ As-built
☒ Permitting	☐ Other

REVISIONS

Rev	By	Description	Date
0	EO	SITE MAP	12/18/2023
1	VC	PRELIMINARY SITE PLAN	5/8/2024
2	VC	INCORPORATE STORWATER MANAGEMENT	5/29/2024
3	VC	UPDATE LAYOUT	6/3/2024
4	VC	ADD PRIME SOILS	6/7/2024
5	VC	ADD DETAILED STORMWATER PONDS	6/20/2024
6	EO	MOVE POI	6/27/2024
7	EO	PERMIT PLAN	7/8/2024

Project Name: HEDERA SOLAR, LLC 3MWac

Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: IMPACTED AREA

Scale:

Project ID: TBD

Sheet No: L1.7

MINUTES

JAMES CITY COUNTY AFD ADVISORY COMMITTEE

REGULAR MEETING

COUNTY GOVERNMENT CENTER BOARD ROOM

101 MOUNTS BAY ROAD, WILLIAMSBURG, VA 23185

October 17, 2024

4:00 PM

A. CALL TO ORDER

Mr. Chris Taylor called the Agricultural and Forestal District (AFD) Advisory Committee meeting to order at 4 p.m.

B. ROLL CALL

Present:
Chris Taylor, Chair
Bruce Abbott, Vice Chair
Richard Bradshaw
David Hogue
Sandy Wanner
Payton Harcum
William Harcum
Will McElfresh

Absent:
Barbara Null
Loretta Garrett

Staff:
Josh Crump, Principal Planner

Others Present:
Ester Rekhelman, Senior Project Developer for Hexagon Energy

C. MINUTES

Mr. Abbott made a motion to Approve the minutes.

Mr. Wanner seconded the motion.

On a voice vote, the Committee voted to approve the Minutes of the July 18, 2024, Regular Meeting.

1. Minutes of the July 18, 2024, Regular Meeting

D. OLD BUSINESS

There was no old business.

E. NEW BUSINESS

1. AFD-24-0004, 101 & 121 Ivy Hill Road, Mill Creek AFD Withdrawal

Mr. Josh Crump, Principal Planner, stated that Ms. Ester Rekhelman, Senior Project Developer for Hexagon Energy, has applied on behalf of Hexagon Energy, to withdraw approximately 60.6 acres out of a total 101.36 acres from the Mill Creek AFD. Mr. Crump stated that the applicant has also applied for a Special Use Permit to permit a 3-megawatt solar facility at this site. Mr. Crump noted that the site has been used for industrial timbering for over 60 years, with its last clearing occurring in 2022.

Mr. Crump stated that in 2010, the Board of Supervisors adopted a policy for withdrawing AFD parcels outside of renewal periods. Mr. Crump stated that this request does not fully meet all four of the criteria set forth in the policy.

Mr. Crump stated that because the request does not fully comply with the Board of Supervisors' policy, staff recommends that the AFD Advisory Committee recommend denial of this request to the Planning Commission and to the Board of Supervisors.

Ms. Ester Rekhelman, Senior Project Developer for Hexagon Energy, made a presentation to the Committee on the proposed AFD withdrawal and solar energy facility. Ms. Rekhelman discussed the timeline of discussion with the property owners, the reason for the size of the proposed AFD withdrawal, and the draft master plan for the solar facility.

The Committee discussed the criteria in the Board of Supervisors' policy governing the withdrawal of parcels outside of renewal periods. The Committee found that the request did not fully meet three of the criteria. The Committee noted that the property owners had ample opportunity to decide about the future use of the property during the renewal process.

The Committee discussed the need to evaluate applications based on the criteria in the Board of Supervisors policy and be consistent in making recommendations.

Mr. Abbott made a motion to recommend denial of the application.

Mr. Wanner seconded the motion.

On a voice vote, the Committed voted unanimously to recommend denial of the application.

F. DISCUSSION ITEMS

There were no items for discussion.

G. ADJOURNMENT

Mr. Taylor made a motion to adjourn.

Mr. Abbott seconded the motion.

On a voice vote, the meeting was adjourned at approximately 4:36 p.m.

_____ _____

Susan Istenes, Secretary Chris Taylor, Chair

SUMMARY FACTS

Applicant:	Ms. Ester Rekhelman, Hexagon Energy, LLC
Landowner:	Ivy Hill, LLC, Barbara Silverman (care of Ellen Lightman), and Ellen Lightman
Proposal:	Development and construction of a solar panel facility for electrical power generation, storage, transmission, and associated activities.
Locations:	101 Ivy Hill Road 121 Ivy Hill Road
Tax Map/Parcel Nos.:	1110100013 1110100024
Project Acreage:	± 47.5 acres
Zoning:	A-1, General Agricultural
Comprehensive Plan:	Rural Lands
Primary Service Area: (PSA)	Outside
Staff Contact:	Roberta Sulouff, Senior Planner

PUBLIC HEARING DATES

Planning Commission:	January 8, 2025, 6:00 p.m.
Board of Supervisors:	February 11, 2025, 5:00 p.m.

FACTORS FAVORABLE

1. Staff finds the proposed conditions mitigate impacts to surrounding properties and development.
2. Staff finds the proposal consistent with the Comprehensive Plan.
3. Impacts: See Impact Analysis on Pages 4-6.

FACTORS UNFAVORABLE

1. Impacts: See Impact Analysis on Pages 4-6.
2. Should the Board of Supervisors (BOS) deny the applicant's Agricultural and Forestal District (AFD) withdrawal request, then this use would not be consistent with the terms of the AFD.

PLANNING COMMISSION RECOMMENDATION

At its January 8, 2025, meeting, the Planning Commission voted 6-1 to recommend the Board of Supervisors approve the application, subject to the proposed conditions. The Planning Commission also approved a resolution to find the proposal consistent with the Comprehensive Plan in accordance with Section 15.2-2232 of the Code of Virginia.

CHANGES SINCE THE PLANNING COMMISSION MEETING

None.

SUMMARY STAFF RECOMMENDATION

Staff recommends that the Board of Supervisors approve the proposed Special Use Permit (SUP) subject to the approval of Case No. AFD-24-0004 and the proposed conditions.

PROJECT DESCRIPTION

Ms. Ester Rekhelman of Hexagon Energy, LLC, has applied for an SUP for a 3-megawatt solar facility to be located at 101 and 121 Ivy Hill Road. If approved, the proposed solar facility will be developed on approximately 47.5 acres of the total 101.36 acres of the properties. The parcel located at 121 Ivy Hill Road is split by the Ivy Hill Road right-of-way and the entirety of the facility will lie east of Ivy Hill Road. Should this request be approved, the area of the property west of Ivy Hill Road will remain undisturbed.

The solar panels will be on a single-axis tracking system that will rotate throughout the day to track the sun. The electricity produced by the panels is collected by wires and connected to inverters. The inverters, via additional wiring, are connected to transformers. The transformers ramp up the power to a higher voltage for transmission and interconnection to the existing electrical grid.

The site will be accessed via Richmond Road, and according to the Virginia Department of Transportation (VDOT) Functional Classification Web Map, is classified as a principal arterial road.

According to the applicant, the facility is intended to operate for a term of 40 years. The owner will sublease the property for a term of up to 40 years. At the end of the sublease term, the owner will cease operation of the facility and execute a Final Decommissioning Plan agreed to by the landlord and facility owner.

PLANNING AND ZONING HISTORY

The site is in the Mill Creek AFD and has been used for industrial timbering for over 60 years, with its last clearing occurring in 2022. The site is cleared approximately every two years.

SURROUNDING ZONING AND DEVELOPMENT

	ZONING DESIGNATION	EXISTING LAND USE	FUTURE LAND USE DESIGNATION
NORTH	A-1, General Agricultural	US 60; Single-family residential, undeveloped-forested land and Commercial	Rural Lands
SOUTH	A-1, General Agricultural	Single-family residential, undeveloped-forested land	Rural Lands
EAST	A-1, General Agricultural	Single-family residential, undeveloped-forested land and Commercial	Rural Lands
WEST	A-1, General Agricultural	Church	Rural Lands

The applicant contacted neighboring parcel owners and conducted a community meeting in the summer of 2024.

Following the Planning Commission, staff met with an adjacent property owner regarding a potential historical gravesite on the property. The area indicated is outside of the solar panel sites, but may be impacted by access roads or stormwater work. The applicant is aware of this concern and did employ a professional archaeologist to do a field study in the area of concern as indicated by the neighbors; no evidence of a gravesite was found. Additionally, staff made two

field visits to investigate the indicated areas and also found no evidence of gravesites. Staff has reached out to state agencies and local funeral homes with knowledge of historical grave site information. Staff has not been able to attain any additional information or evidence of a historical gravesite on the property.

FINDING OF CONSISTENCY

Section 15.2-2232 of the Code of Virginia requires that unless a utility facility is shown on the Comprehensive Plan or other Master Plans for the County, the local Planning Commission and governing body shall review the facility to determine whether the location, character, and extent of the facility is substantially in accord with the Comprehensive Plan.

The Planning Commission also approved a resolution to find the proposal consistent with the Comprehensive Plan in accordance with Section 15.2-2232 of the Code of Virginia.

Impacts/Potentially Unfavorable Conditions	**Status** *(No Mitigation Required/Mitigated/Not Fully Mitigated)*	**Considerations/Proposed Mitigation of Potentially Unfavorable Conditions**
Public Transportation: Vehicular	No Mitigation Required	- The new solar facility would not exceed 100 peak hour trips. - Access to the properties is proposed to be from Richmond Road, a principal arterial road. Access via the existing shared, private drive will not be permitted for this use.
Public Transportation: Bicycle/Pedestrian	Mitigated	- Per the Adopted Regional Bikeways Map Pedestrian Accommodation's Master Plan, a multiuse path is required along the north side of Richmond Road and will be addressed during the site plan review stage.
Public Safety	Mitigated	- Fire Station 1 on Forge Road serves this area of the County, approximately 3.6 miles from the proposed solar facility. - Condition No. 4 requires all photovoltaic solar panels on the properties to be made of or be coated with anti-reflective materials to prevent glare. - Condition No. 10 requires an Emergency Management Plan to address situations that may require response from public safety personnel.
Public Schools	No Mitigation Required	- N/A since no residential dwelling units are proposed.
Public Parks and Recreation	No Mitigation Required	- N/A since no residential dwelling units are proposed.
Public Libraries and Cultural Centers	No Mitigation Required	- Staff finds that the facility does not generate impacts that require mitigation.
Groundwater and Drinking Water Resources	No Mitigation Required	- The Property does not receive public water and sewer. The solar facility would not need water or sewer services.

Impacts/Potentially Unfavorable Conditions	**Status** *(No Mitigation Required/Mitigated/Not Fully Mitigated)*	**Considerations/Proposed Mitigation of Potentially Unfavorable Conditions**
Watersheds, Streams, and Reservoirs Project is located in the Diascund Creek Watershed.	Mitigated	- The Master Plan shows a conceptual layout for stormwater management facilities. - This facility will need to demonstrate full compliance with environmental regulations at the site development plan stage, but no other specific environmental impacts have been identified for mitigation. Language has been included for the decommissioning plan to address stormwater ponds (Condition No. 12). - Condition Nos. 11 and 13 address the requirement for a spill prevention control and countermeasures plan and a nutrient management plan, respectively. - The Stormwater and Resource Protection Division proposed several SUP conditions including requirements to provide a nutrient management plan, special stormwater criteria, Resource Protection Area (RPA) requirements, stormwater Best Management Practices (BMP) design, Virginia Runoff Reduction Method (VRRM) and nutrient credits, channel and flood protections, erosion and control inspections and designs, panel cover calculations, soil discing, BMP access road requirements, outfall monitoring, and stormwater BMP outfall requirements.
Cultural/Historic	Mitigated	- Per Section 24-145 of the Zoning Ordinance, an archaeological study and natural resource inventory will be required at the site development plan stage. The applicant included a copy of the Phase 1A study as Appendix E of the application materials. This study included additional site work to address a potential gravesite on the property. If a Phase 1B study is recommended, it will be required under the aforementioned code reference. Additionally, see Page 3, above.

Impacts/Potentially Unfavorable Conditions	**Status** *(No Mitigation Required/Mitigated/Not Fully Mitigated)*	**Considerations/Proposed Mitigation of Potentially Unfavorable Conditions**
Nearby and Surrounding Properties	Mitigated	- Condition Nos. 3 and 4 also limit the height of the panels and address use of materials to prevent glare. - Condition No. 9 requires the facility owner or operator notify the Zoning Administrator and adjacent property owners prior to the start of any pile driving phase(s). - Condition Nos. 5 and 6 limit the height of any proposed light poles and fencing and the color and material of the fencing. - Condition No. 9 requires damaged panels to be stored within a fully enclosed hazardous material and chemical storage container or provide an alternate plan on how damaged panels will be stored or processed. - Condition No. 7 requires a construction management and mitigation plan which is intended in part to address impacts to nearby properties during the construction stage. - The facility will also need to demonstrate full compliance with lighting and landscaping regulations in the Zoning Ordinance at the site development plan review stage.
Community Character The facility is located along the Richmond Road Community Character Corridor (CCC).	Mitigated	- Section. 24-98(a) requires a landscape buffer averaging 100 feet in width (minimum width 50 feet) along roads designated Wooded CCCs. The appropriate buffer is shown on the binding Master Plan.
Covenants and Restrictions	No Mitigation Required	- The applicant has verified that she is not aware of any covenants or restrictions on the properties that prohibit the proposed use.

NATURAL AND CULTURAL ASSETS

The site is identified as having natural and cultural assets on the Natural & Cultural Assets Plan (NACA) maps (and/or other supplemental resources such as Virginia Lands and Energy Navigator (VaLENS) as follows:

ASSET	PRESENCE	IMPACT
Habitat Core	Present on site; see Attachment No. 6 and Master Plan Page L1.6.	-All habitat cores identified in the NACA maps are important ecologically. Of the 1-5 ranking system used, the core on this property is ranked in category one (the lowest priority). -All portions of the site within the habitat core are outside the areas of disturbance.
Habitat Corridors	Present on site; see Attachment No. 6 and Master Plan Page L1.6.	All portions of the site labeled as habitat corridor are outside the areas of disturbance.
Agricultural Assets	Present on Site; see Attachment No. 7.	-While 28.6 acres of the property are rated as Prime Farmland, only 9.9 of those acres are within the proposed facility limits (8.5 acres inside the fence line and an additional 1.4 acres outside of the fence line for roads, BMPs, etc.) -Conditions aim to mitigate excessive erosion and will aid in returning this land to farmland after the life of the facility.

SOLAR POLICY

On December 10, 2024, the Board of Supervisors adopted a Solar Facilities Policy to address application requirements, siting, and performance standards for solar facility development applications in the County (see Attachment No. 9). While staff finds this application to be generally consistent with the policy, the following areas do not fully meet the draft policy standards as shown below in reference to draft policy item numbers:

a. Distance to Residences (No. 4): As shown on the Master Plan and detailed on Page 8 of the application binder (see Attachment No. 5), one neighboring residence along Ivy Hill Lane is approximately 236 feet away from the fence line of the facility. Per the policy, solar facilities should not be located within 400 feet of residences. To mitigate this, the applicant has reached out numerous times to the neighboring residence to engage on design considerations and has proposed a 50-foot buffer of existing vegetation along Ivy Hill Lane to screen the visual and construction noise of the facility.

b. Minimum Siting Distance and Buffering (No. 6): The proposed facility is located approximately .95 miles from the fence line of the nearest neighboring solar facility. Per the policy, there should be a minimum distance of one mile between fenced areas of separate solar facilities. Staff acknowledges that this distance is approximate because the neighboring solar facility has yet to be completed and is still going through site plan review. The location of either facilities' fencing could change during the development review process. See Appendix T of Attachment No. 5 for further information on this issue.

c. Forested Land (No. 11): Per the policy, it states solar facilities should avoid the use of forested land. As mentioned in the Planning and Zoning History section, this property has been used for industrial timbering for over 60 years and has been cleared approximately every two years, with its last clearing occurring in 2022.

COMPREHENSIVE PLAN

The site is designated Rural Lands on the Comprehensive Plan Land Use Map.

Rural Lands are areas containing farms, forests, and scattered houses, exclusively outside of the PSA, where a lower level of public service delivery exists or where utilities and urban services do not exist and are not planned for in the future. Rural Lands uses are intended to help protect and enhance the viability of agricultural and forestal resources and compatible rural economic development uses as important components of the local economy.

Retail and other commercial uses serving Rural Lands are encouraged to be located at planned commercial locations on major thoroughfares inside the PSA. However, appropriately scaled and located direct agricultural or forestal-support uses (including agri-business and eco-tourism), home-based occupations, or certain uses which require very low-intensity settings relative to the site in which it will be located may be considered on a case-by-case review, provided such uses are compatible with the natural and rural character of the area and are in accordance with the Rural Lands Development Standards. These uses should be located in a manner that minimizes effects on agricultural and forestal activities, and where public services and facilities, especially roads, can adequately accommodate them.

- *While not a typical primary use, staff finds this use could be appropriate in Rural Lands as solar facilities in general are low-intensity uses (traffic, noise, etc.) after the initial construction phase, and could be temporary in nature and return to agricultural or forestal use at the conclusion of the lease term/decommissioning. Staff finds the use generally compatible with the character of the area and generally in accordance with the Rural Lands Development Standards, provided adequate buffering and conditions are provided. The majority of the land has been continuously timbered, is surrounded by natural wooded growth, shielded from Richmond Road by a natural berm, and the applicant will provide enhanced buffering along Richmond Road.*

- *Staff finds Richmond Road will adequately accommodate the expected traffic that would be generated from this facility.*

Per the Development Standards, uses proposed in the Rural Lands should reflect and enhance the rural character of the County. Particular attention should be given to the following:

i. Locating structures and uses outside of sensitive areas;

- *Staff finds this proposal lies outside of the RPA, the applicant has sited the project on the property so as to avoid steep slopes and other unstable soils, and the habitat cores intersecting with the facility area are classified as the "lowest" priority.*

ii. Maintaining existing topography, vegetation, trees, and tree lines to the maximum extent possible, especially along roads and between uses:

- *Given the current use of the property for commercial timbering, staff finds this proposal does not propose*

significant changes to topography, trees, and tree lines, and will provide an enhanced buffer along Richmond Road and screening from adjacent property owners. Much of the existing vegetation in the area of disturbance is new growth or understory.

- *Staff finds the facility area will change existing vegetation into cleared areas.*

- *Staff finds the facility area will incorporate pollinator friendly species around panel bases.*

iii. Discouraging development on farmland, open fields, scenic roadside vistas, and other important agricultural/forestal soils and resources;

- *Development of the facility will disturb 9.9 acres of area which is designated as prime farmland. Per the applicant, care was taken in siting the solar panels, access roads, and stormwater infrastructure to avoid disturbance of those soils while still meeting buffering requirements and avoiding other sensitive areas on-site.*

iv. Encouraging enhanced landscaping to screen structures located in open fields using a natural appearance or one that resembles traditional hedgerows and windbreaks;

- *Given the current use of the property for commercial timbering, staff finds the proposed facility does not propose significant changes to existing trees and existing tree lines. The facility will be screened by an enhanced buffer along Richmond Road thus screening it from adjacent property owners.*

v. Locating new driveways or service roads so that they follow existing contours and old roadway corridors whenever feasible;

- *Staff finds the solar facility will comply with VDOT regulations requiring a low-volume commercial entry.*

- *In response to initial staff comments, the entrance to the facility was moved from Ivy Hill Road to Richmond Road. The applicant has also stated that she has avoided using the existing private drive that bisects the eastern portion of the property for construction or operation as a courtesy to neighbors who use that drive to access their properties.*

vi. Generally limiting the height of structures to an elevation below the height of surrounding mature trees and scaling buildings to be compatible with the character of the existing community;

- *Staff finds the solar panels will not exceed 17 feet in height which is well below the mature height of surrounding trees.*

- *The site is naturally buffered due to existing contours.*

vii. Minimizing the number of street and driveway intersections along the main road by providing common driveways; and

- *There is one entrance proposed for both ingress and egress for this facility.*

viii. Utilizing lighting only where necessary and in a manner that eliminates glare and brightness.

- *Staff finds permanent lighting is not included in the proposal.*

The Comprehensive Plan discourages development on farmland, open fields, scenic roadside vistas, and other important agricultural and forestal soils and resources.

- *Staff finds that development of this facility includes plantings that support bees and other pollinating insects.*

- *Staff finds that development of this facility does include the clearing of trees utilized for forestal purposes.*

- *Staff finds the proposed facility is consistent with the Comprehensive Plan by designing, constructing, and operating a solar panel facility in an efficient and environmentally sustainable manner and complementary of local community character.*

Within the Community Character Chapter of the Comprehensive Plan, Goals, Strategies, and Actions (GSAs) GSA 1.5 calls for preserving the character of rural roads by identifying roads that should be preserved and work with VDOT to maintain their rural character while providing an acceptable level of safety.

- *Staff finds the proposed facility would not negatively impact capacity or geometry on Richmond Road; the solar facility would not exceed 100 peak hour trips, and access to the property is from Richmond Road, a principal arterial road. The access road to the property will be improved to a low volume commercial entry. A 100-foot buffer along the frontage will support and maintain the rural character and scenic roadside vistas.*

Within the Land Use Chapter of the Comprehensive Plan, Goals, Strategies, and Actions (GSAs) GSA 1.6 calls for exploring emerging technologies in the renewable energy industry, with the intention of protecting the County's unique rural character, preserving natural resources, and mitigating impacts to neighboring properties.

- *Staff finds the proposed facility is consistent with the Comprehensive Plan by utilizing innovation and technology where the lifespan, efficiency, and durability is clearly demonstrated.*

PROPOSED SUP CONDITIONS

The full text of the proposed conditions is provided in Attachment No. 1.

STAFF RECOMMENDATION

Staff finds the proposed solar panel facility to be compatible with surrounding development and is consistent with the recommendations of the Comprehensive Plan. Staff recommends the Board of Supervisors approve the proposed SUP with the proposed conditions to the BOS subject to the approval of Case No. AFD-24-0004.

Staff also recommends that the BOS find that the general or approximate location, character, and extent of this proposed solar panel facility are substantially in accord with the Comprehensive Plan and applicable parts thereof, as required by Section 15.2-2232 of the Code of Virginia.

RS/ap
SUP24-16IvyHSol

Attachments:
1. Resolution
2. Location Map
3. Applicant Narrative
4. Master Plan
5. Application Binder
6. Habitat Cores
7. Agriculture Soils
8. Adopted Resolution for Consistency with Section 15.2-2232
9. Adopted BOS Solar Policy
10. Unapproved Minutes of the January 3, 2025, Planning Commission Meeting

R E S O L U T I O N

CASE NO. SUP-24-0016. 101 AND 121 IVY HILL ROAD, HEDERA SOLAR FACILITY

WHEREAS, the Board of Supervisors of James City County, Virginia (the "Board"), has adopted by Ordinance specific land uses that shall be subjected to a Special Use Permit ("SUP") process; and

WHEREAS, Ms. Ester Rekhelman of Hexagon Energy, LLC, has applied for an SUP on behalf of Ivy Hill LLC, Barbara Silverman c/o Ellen Lightman, and Ellen Lightman the owners of property located at 101 Ivy Hill Road and 121 Ivy Hill Road and further identified as James City County Real Estate Tax Map Parcel Nos. 1110100013 and 1110100024 (the "Property"), to allow for the construction of a photovoltaic solar electrical generation facility (the "Facility") producing up to three megawatts (MW) as measured in alternating current (AC) of electricity on the Property and Facility shown on a plan titled "Hedera Solar" dated November 12, 2024; and

WHEREAS, the Planning Commission, following its public hearing on January 8, 2025, recommended approval of Case No. SUP-24-0016 by a vote of 6-1; and

WHEREAS, a public hearing was advertised, adjoining property owners notified, and a hearing conducted on Case No. SUP-24-0016; and

WHEREAS, the Board of Supervisors of James City County, Virginia, finds this use to be consistent with good zoning practices and the Comprehensive Plan Land Use Map designation for the Property.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of James City County, Virginia, after consideration of the factors in Section 24-9 of the James City County Code (the "County Code"), does hereby approve the issuance of Case No. SUP-24-0016 as described herein with the following conditions:

1. *Master Plan*. This SUP shall be valid for the construction of a photovoltaic solar electrical generation facility (the "Facility") producing up to three megawatts (MW) as measured in alternating current (AC) of electricity on property located at 101 and 121 Ivy Hill Road and further identified as James City County Real Estate Tax Map Parcel Nos. 1110100013 and 1110100024, respectively (the "Property"). The Property and Facility shall be developed and constructed substantially in accordance with the plan titled "Hedera Solar" prepared by Hexagon Energy, LLC, and dated November 12, 2024 (the "Master Plan"), with any deviations considered per Section 24-23(a)(2) of the Zoning Ordinance, as amended.

2. *Project Revenue for Public Improvements.* The owner of the Facility agrees to pay to the County the greater of: (A) the machinery and tool tax obligation assessed per the County Code or (B) that which would be due under a Revenue Share Ordinance adopted pursuant to Virginia Code Section 58.1-2636. Upon completion of the Facility, the Facility owner will provide final capital expenditures to the County. The Facility owner agrees to make the payments due pursuant to this condition to the County on or before July 1 of each year to support construction of public improvements, the necessity of which need not be generated solely by the issuance of this SUP.

3. *Height Limitation.* The maximum height of all structures on-site shall not exceed 17 feet above finished grade.

4. *Glare.* All photovoltaic solar panels shall be made of or be coated with anti-reflective materials to prevent glare.

5. *Lighting.* If any lighting is proposed, it shall be shown on a lighting plan, and the Director of Planning or designee shall review and approve the lighting plan prior to final site plan approval. Lights shall be operated by a motion detector or be able to be turned on as needed by the operators of the Facility and shall not be routinely illuminated at night. No light poles shall exceed a height of 17 feet above finished grade unless otherwise approved by the Director of Planning prior to final site plan approval.

6. *Fencing.* Any fence on the Property shall be black or other neutral color and shall not exceed a height of eight feet above finished grade and not consist of barbed wire. Prior to final approval of any site plan, the Director of Planning or designee shall review and approve a detail of any proposed fencing on the Property for consistency with this condition.

7. *Storage of Panels.* Damaged panels shall not be stored on-site unless they are within a fully enclosed hazardous material and chemical storage container that meets Occupational Safety and Health Administration and Environmental Protection Agency standards, as determined by the County Fire Chief or designee. The location of such storage container, if used, shall be shown on the approved site plan. Should such a storage container not be used or available, a written plan shall be provided on how damaged panels will be stored or processed such that hazardous materials will not come into contact with any soil or groundwater or surface water. Such a plan shall be subject to the approval of the Director of the Stormwater and Resource Protection Division prior to final site plan approval.

8. *Construction Management and Mitigation Plan.* A Construction Management and Mitigation Plan shall be provided for review and approval by the Director of Planning or designee prior to the approval of the site plan and shall include the following:

    a. Construction Management
        - Designated parking areas.
        - The plan shall note that all pile driving activity on the Property shall be limited to the hours of 8 a.m. to 6 p.m., Monday through Friday.
        - The plan shall note that other construction activities, including clearing and grading of the Property shall be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday.
        - The plan shall note that construction delivery traffic to the Property shall not be allowed during pick-up/drop-off times for surrounding schools.
        - The plan shall indicate what methods will be used for the storage, transportation, and disposal of any waste and/or hazardous materials and the location of any storage facilities on-site.

b. Construction Mitigation
   - The plan shall indicate what methods will be used for dust mitigation.
   - The plan shall indicate how burning will be handled on-site.

9. *Pile Driving Notice.* The James City County Zoning Administrator and adjacent property owners shall be notified, in writing, seven (7) days prior to the start of any pile driving phase(s).

10. *Emergency Management Plan.* Prior to final approval of any site plan, an Emergency Management Plan (the "EMP") shall be prepared to address situations that may require response from James City County public safety personnel, including, without limitation, fire safety and emergency response personnel. The EMP shall:
    a. Be developed in conjunction with and approved by the County Fire Chief and County Police Chief or their designees prior to final approval of any site plan.
    b. Provide a mutually agreed-upon schedule of communication and training sessions for James City County public safety personnel relative to possible emergency response situations at the Facility.
    c. Provide emergency contact information of the owners and operators of the Facility to County public safety personnel.
    d. Provide that all emergency contact information pursuant to (c) will be posted on all Facility access gates.

11. *Spill Prevention Control and Countermeasure Plan.* Prior to approval of any site plan, a Spill Prevention Control and Countermeasure Plan (the "SPCCP") for the Facility shall be submitted to the Director of Stormwater and Resource Protection Division or designee for review and approval. The SPCCP shall outline spill prevention and pollutant containment measures and procedures necessary for the operation of the Facility until decommissioning.

12. *Decommissioning and Restoration Plan and Agreement.* Prior to final approval of any site plan, a Decommissioning and Restoration Plan (the "DRP") shall be submitted to the Director of Planning or designee for review and approval. The DRP shall outline the required steps for removal of all above- and below-ground Facility components, disposal and/or recycling of wastes and materials, soil stabilization, soil testing and mitigation for any found hazardous materials, and the revegetation and restoration of native habitat of the Property restored in a manner consistent with its condition prior to Facility construction. At the time of Facility decommissioning, the stormwater facilities on the Property must be evaluated for continued need and the final DRP must include the close-out or remediation of stormwater facilities. The DRP shall be enforceable by a written decommissioning agreement in accordance with and subject to the terms of Virginia Code § 15.2-2241.2. To ensure sufficient funds are available to the County to conduct the DRP, a surety in an amount sufficient for decommissioning the Facility and remediating the Property shall be posted with James City County in a form acceptable to the County Attorney. The decommissioning agreement shall be executed prior to approval of a site plan for the Facility.

13. *Nutrient Management Plan.* A Nutrient Management Plan (the "NMP") prepared by a Certified Nutrient Management Planner shall be submitted for all of the area within the defined limits of work (disturbance) for the Property. The purpose of the NMP is to provide for long-term establishment and maintenance of turf grass, pasture, rangeland, or other similar type vegetative cover which preserve the long-term soil health for potential future farming purposes. The NMP shall have a component which specifically identifies and maintains and protects designated Prime Farmland soil mapping units consistent with Natural Resources Conservation Service soil data. The NMP shall be submitted for review and approval by the Director of Stormwater and Resource Protection Division prior to approval of any final site plan for the Facility. Upon approval of the NMP, the Facility owner shall be responsible for ensuring that any nutrient applied in the area within the defined limits of work is in strict accordance with the NMP.

14. *Native Pollinators.* Disturbed areas requiring reseeding shall be seeded with a seed mix for site groundcover that includes native pollinators and native grasses which bloom in spring and/or summer as identified by the Virginia Department of Environmental Quality's (DEQ) and the Virginia Department of Conservation and Recreation's Virginia Pollinator-Smart program or the U.S. Department of Agriculture Farm Service Agency's Conservation Reserve Program. A landscaping plan showing the areas being reseeded, including a detailed list of plant species included in the seed mix, shall be reviewed and approved by the Director of Planning or designee prior to final site plan approval.

15. *Resource Protection Area.* Impacts to the Resource Protection Area (the "RPA") shall be limited to required stormwater Best Management Practice (the "BMP") the outfalls and there shall be no clearing of trees or other vegetation to allow for sunlight access to panel arrays within the RPA, as determined by the Director of Stormwater and Resource Protection Division.

16. *Virginia Runoff Reduction Method.* The Forested Open Space (the "FOS") land use category may be used to account for a maximum of 25% of the required water quality associated with the proposed development. The purchase of offsite nutrient credits toward needed water quality associated with the Facility will not be allowed. Should FOS or Mixed Open be used in the Virginia Runoff Reduction Method calculations, the area(s) must meet the criteria set forth in Virginia Stormwater BMP Clearinghouse or the Virginia Stormwater Management Handbook equivalent. The declared area(s) must treat sheet flow from the Facility, in accordance with the Virginia Stormwater BMP Clearinghouse design specification criteria. The proposed use of FOS or Mixed Open Space on the Property, disconnected from any drainage patterns of the Facility, will not be allowed.

17. *Erosion and Sediment Control Inspection.* At the County's sole discretion, inspections required by James City County Code Section 8-15 may be performed by a certified third-party inspector, the costs of which shall be reimbursed by the Facility operator.

18. *Panel Cover.* Solar panels shall be considered unconnected impervious areas for post-development water quantity calculations as defined in Chapter 9, Part 630 of the National Resources Conservation Service National Engineering Handbook. Calculations shall be in accordance with DEQ policy memoranda and guidance documentation for solar farm development, as determined by the Director of Stormwater and Resource Protection Division.

19. *Discing*. After areas to be topsoiled have been brought to grade, and immediately prior to dumping and spreading the topsoil, the subgrade (subsoil) should be loosened by discing to a depth of at least two inches to ensure bonding of the topsoil and subsoil. This shall be done to all areas not noted as impervious on the site. Geotechnical reporting of this action shall be submitted to the Director of Stormwater and Resource Protection Division as part of the stormwater management final as-built packages.

20. *BMP Access Roads*. BMP access roads shall be a paved or gravel surface and shall be a minimum of 12 feet wide with ingress and egress at each BMP with access to the downstream BMP areas, to include the outfall structure and outfall barrel discharge areas.

21. *Temporary Erosion and Sedimentation Control Designs*.
    a. Unless directly connected to the stormwater conveyance system, the solar panels shall be considered unconnected impervious area when performing runoff computations for erosion and sediment controls.
    b. All temporary trap or basin designs shall include the attenuation of a 25-year storm event in order to protect the existing downstream receiving channels, as determined by the Director of Stormwater and Resource Protection Division.

22. *Outfall Monitoring*. The downstream outfall channels from each permanent BMP shall be visually monitored annually for degradation and a report provided to the Director of Stormwater and Resource Protection Division by December 31 of each year for the life of the Facility. A baseline report shall be provided after all sediment basin construction is completed; current channel conditions shall be photo-documented, and the documentation shall extend to the confirmed United States Army Corps of Engineers wetland line below each basin. Each outfall channel shall have at least three photo stations. If channel degradation is in evidence per the Director of Stormwater and Resource Protection Division and meaning a head cut of more than 12 inches in height, a channel restoration plan must be provided to the Director of Stormwater and Resource Protection Division by March 31 of the following year and restoration activities commenced by June 30. This may include areas outside of the Facility on the Property. A restoration plan shall mean an Erosion Control and Stormwater Management Plan that provides for the repair of the degraded area to a stable line and grade and provides an erosion resistant surface over the repaired area sufficient to prevent future degradation from the basin outfall. At the end of the fifth year of reporting, should no channel degradation have been identified based on a review by the Director of Stormwater and Resource Protection Division, this condition is considered fulfilled and no further reporting will be required.

23. *Stormwater BMP Outfalls*.
    a. Piped outfalls for any stormwater BMP shall be placed at slopes of 0.5% or less for the final 16 linear feet of the piped run.
    b. Stilling basins shall be required at the discharge point of each stormwater BMP outfall. These stilling basins shall be designed using the 100-year discharge flow rate.
    c. Outfall locations shall be no fewer than 20 feet from any property line. The stilling basin may not extend into this 20-foot buffer.

24. *Signage.* Unless otherwise exempt by Section 24-74 of the Zoning Ordinance, no outdoor signage related to the Facility shall be permitted on the Property.

25. *Commencement.* If construction has not commenced on the Facility within 36 months from the issuance of the SUP, the SUP shall become void. Construction shall be defined as obtaining a land disturbing permit and start of land disturbing construction activities. A signed letter shall be submitted to the Director of Planning to confirm the Facility is in operation within 48 months from the issuance of the SUP. If the Facility is not in operation within 48 months from the issuance of the SUP, the Zoning Administrator or designee shall institute the revocation process as stated James City County Code Section 24-12.

26. *Severance Clause.* This SUP is not severable. Invalidation of any word, phrase, clause, sentence, or paragraph shall invalidate the remainder.

_____
James O. Icenhour, Jr.
Chair, Board of Supervisors

ATTEST:

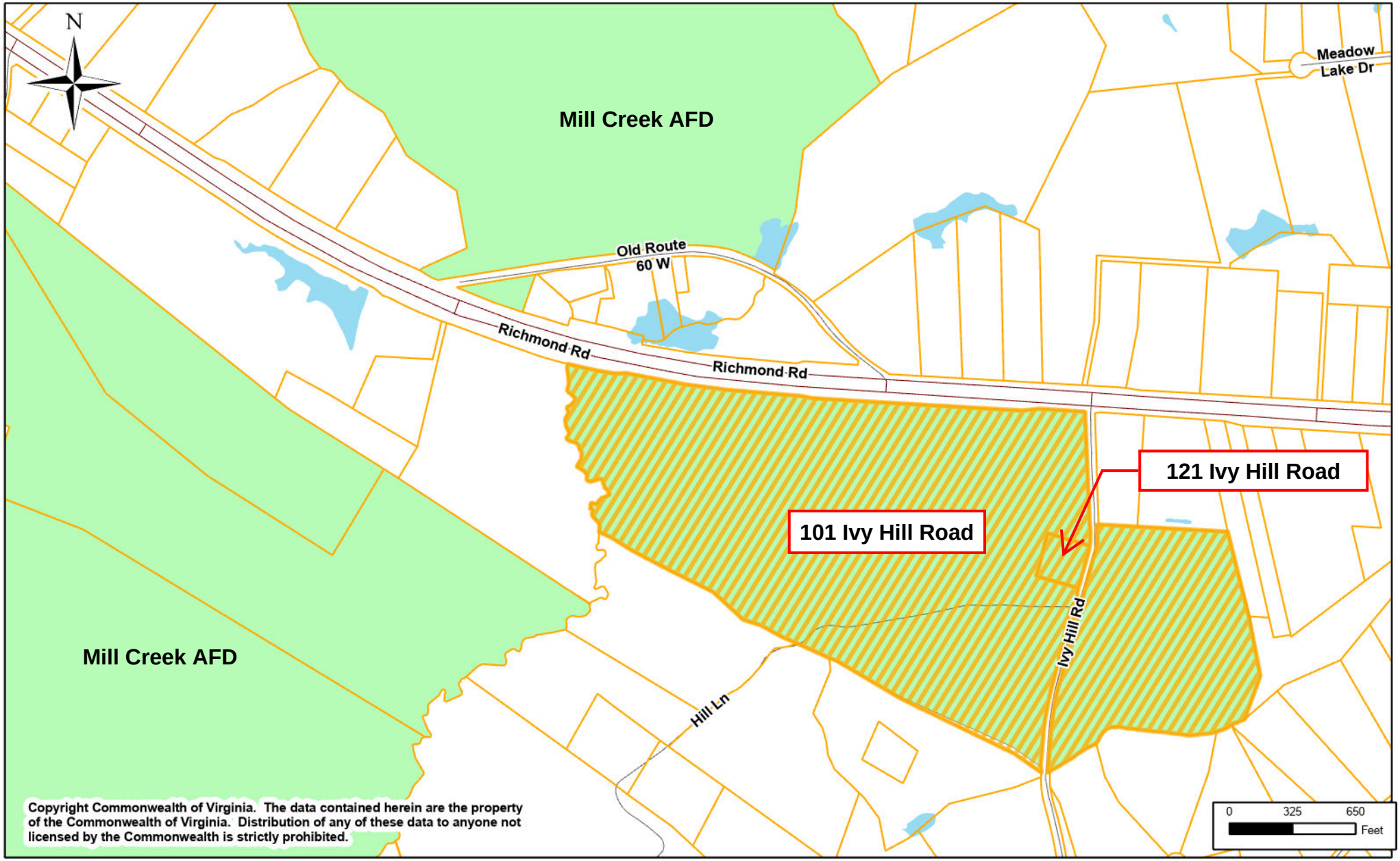
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Teresa J. Saeed
Deputy Clerk to the Board

	VOTES			
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HIPPLE	____	____	____	____
NULL	____	____	____	____
LARSON	____	____	____	____
MCGLENNON	____	____	____	____
ICENHOUR	____	____	____	____

Adopted by the Board of Supervisors of James City County, Virginia, this 11th day of February, 2025.

SUP24-16IvyHSol-res

JCC-AFD-24-0004
101 & 121 Ivy Hill Road
Mill Creek AFD Withdrawal



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Hedera Solar
3 MWac
James City County

Key Details About the Design of Hedera Solar, LLC

Project Description

The Hedera Solar project is a proposed three-megawatt (MWAC) photovoltaic (PV) solar energy generating system, designed to occupy approximately 30 acres of a 101.3-acre property located at the intersection of Richmond Road and Ivy Hill Road in the Powhatan District of James City County. This site is zoned A-1 General Agriculture and has been meticulously planned to adhere to James City County's Zoning Ordinance, as well as Virginia's permitting and approval requirements. The design has also taken into account the draft Solar Facilities Policy, which, while still under consideration, will guide our project's alignment with community goals.

Community Engagement and Design Considerations

The development team has actively engaged with the staff of James City County to incorporate community feedback into our Master Plan. The resulting design reflects our commitment to the County's needs, the land's natural features, and the privacy of neighboring residents. Key design elements include:

- **Extensive Setbacks and Vegetative Buffers**: The Master Plan features generous setbacks from neighboring properties and a comprehensive vegetative buffer system. This includes a 100-foot buffer along Richmond Road, a 50-foot buffer along Ivy Hill Road, and a 50-foot buffer along Hill Lane, which serves as private access for adjacent landowners. The existing dense vegetation on-site and the property's slight elevation relative to Richmond Road will create a natural visual barrier, effectively shielding the facility from view.
- **Proximity to Dwellings**: Most neighboring residences are over 400 feet from the project's fenceline, ensuring minimal visual impact. The closest dwelling, situated 236 feet away, will benefit from the proposed 50-foot buffer along Ivy Hill Road.
- We recognize the importance of open communication with all stakeholders, and our team has made multiple attempts to engage with the owner of the property nearest to the fenceline (236 feet). Specifically, we have reached out four times through letters and door-to-door visits to discuss the project and address any concerns. Unfortunately, these efforts have not led to any direct interaction. However, the absence of feedback suggests that this landowner may not have significant concerns regarding the development. We remain committed to fostering dialogue and are open to further discussions to ensure transparency and address any questions that may arise.

Community Support and Feedback

Our outreach efforts have included door-to-door engagement and a community meeting held

in the summer of 2024. We are pleased to report strong verbal support from residents, particularly those along Hill Lane, who expressed satisfaction with our proposed setbacks and buffers. No concerns were raised during the community meeting, reinforcing our belief that the project aligns with community interests.

Compliance with Policy and Environmental Considerations
The current Master Plan is just 255 feet short of the 1-mile separation required by the draft Solar Facilities Policy from an approved solar facility on Richmond Road. Repositioning the arrays to meet this requirement is not possible as it will infringe on an existing RPA. Such a move would disturb sensitive soils and steep slopes, contrary to guidance from the County's Stormwater and Resource Protection Division. The decision to keep the panels where they were originally designed prioritizes the long-term health of these critical ecological areas.

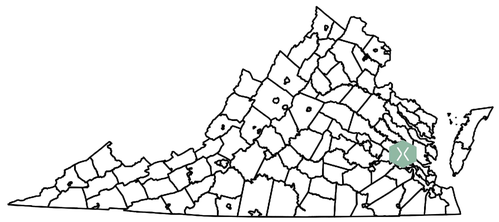
Agricultural and Environmental Stewardship
The project site is located within the Mill Creek Agricultural and Forestal District (AFD). As part of the approval process, we must remove 60.6 acres from the AFD, leaving 40 acres still enrolled. We engaged with the AFD Committee regarding this request; however, they recommended against allowing the withdrawal since this request was made during a non-renewal year. The Committee can only approve such withdrawals in off-years under a certain set of requirements, one of which includes unforeseen circumstances, such as a death in the family, which did not apply to our case.

It is important to note that the property is currently utilized for commercial timber operations. As a result, trees on this site are harvested on a cyclical basis, regardless of whether it is developed into a solar facility. Thus, even without this solar project, the ecological landscape will experience changes due to regular timber harvesting. Our design aims to minimize the area necessary for clearing and enhance the area's aesthetic and ecological value, incorporating extensive vegetative buffers around the solar facility.

Furthermore, while we are requesting the removal of some land from the AFD, the emission reductions generated by a solar facility of this size will significantly outweigh the environmental impact of the timber removal or potential permanent development, such as housing. This project not only supports renewable energy goals but also contributes to the overall sustainability of the community, promoting long-term ecological health while ensuring that a portion of the land remains devoted to forestal use.

Economic and Community Benefits
Hedera Solar promises to deliver substantial tax revenue to James City County without placing additional demands on local resources such as water, sewer, or schools. This project will act as a quiet neighbor, enhancing local landowner interests and benefiting the broader community. In summary, the Hedera Solar project represents a forward-thinking initiative that balances renewable energy development with community values and environmental stewardship. We look forward to your feedback as we advance this project.

VIRGINIA VICINITY MAP



HEDERA SOLAR

3 MWac SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

JAMES CITY COUNTY VICINITY MAP



DRAWING SET CONTENTS	
DRAWING TITLE	DRAWING NUMBER
COVER SHEET	L1.0
MASTER PLAN	L1.1
SITE PLAN	L1.2
ADJACENT PARCELS	L1.3
EXISTING CONTOURS	L1.4
SOIL MAP	L1.5
HABITAT CORES	L1.6
IMPACTED AREA	L1.7

PROJECT OVERVIEW	
PARCEL ID	1110100013 & 1110100024
LANDOWNER	IVY HILL LLC & BARBARA SILVERMAN
ZONING	A1
PARCEL AREA	100 ACRES
SPECIAL USE PERMIT BOUNDARY	47.5 ACRES
CONCEPTUAL LIMITS OF DISTURBANCE	47.5 ACRES
CONCEPTUAL FENCED AREA	16.5 ACRES

DEVELOPMENT TEAM	
LEAD DEVELOPER	ESTER REKHELMAN (434.218.0595)

HEXAGON ENERGY

HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
Charlottesville, VA 22902
Phone: 434.227.5090
Website: www.hexagon-energy.com

Professional Engineer:

PE Seal:

DRAWING TYPE

- ☐ Preliminary
- ☐ Customer Approval
- ☒ Permitting
- ☐ Construction
- ☐ As-built
- ☐ Other

REVISIONS

Rev	By	Description	Date
0	EO	SITE MAP	12/18/2023
1	VC	PRELIMINARY SITE PLAN	5/8/2024
2	VC	INCORPORATE STORWATER MANAGEMENT	5/29/2024
3	VC	UPDATE LAYOUT	6/3/2024
4	VC	ADD PRIME SOILS	6/7/2024
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6	EO	MOVE POI	6/27/2024
7	EO	PERMIT PLAN	7/8/2024
8	EO	ADD BMP ACCESS ROADS	9/19/2024
9	EO	ADD COVER SHEET & REVISE ENTRANCE	10/7/2024
10	EO	REVISE IMPACTED PRIME FARMLAND	10/9/2024
11	EO	ADD REVISED RPA & STORMWATER PONDS	11/6/2024

Project Name: HEDERA SOLAR, LLC 3MWac

Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: COVER SHEET

Scale:

Project ID: TBD

Sheet No: L1.0



LEGEND

- PARCEL BOUNDARY
- SETBACKS (50' FROM PROPERTY LINE, 100' FROM PUBLIC ROW)
- PROPOSED FENCE AREA
- PROPOSED SOLAR PANELS (SINGLE AXIS TRACKERS)
- PROPOSED PROJECT SWITCHGEAR AND MV TRANSFORMER
- PROPOSED INTERNAL ROAD
- BMP ACCESS ROADS
- PROPOSED ATTACHMENT LINE
- PROPOSED UTILITY POLES
- PROPOSED POI
- EXISTING DISTRIBUTION LINE
- UTILITY ROW (30')
- DELINEATED WETLANDS
- DELINEATED STREAMS
- RPA (100')
- VEGETATIVE BUFFER
- HABITAT CORE
- HABITAT CORRIDOR
- SOILS CLASSIFIED AS "ALL AREAS PRIME FARMLAND"
- EXISTING CONTOURS (3')
- STORMWATER FACILITY
- ADJACENT PARCEL BOUNDARIES

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HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
Charlottesville, VA 22902
Phone: 434.227.5090
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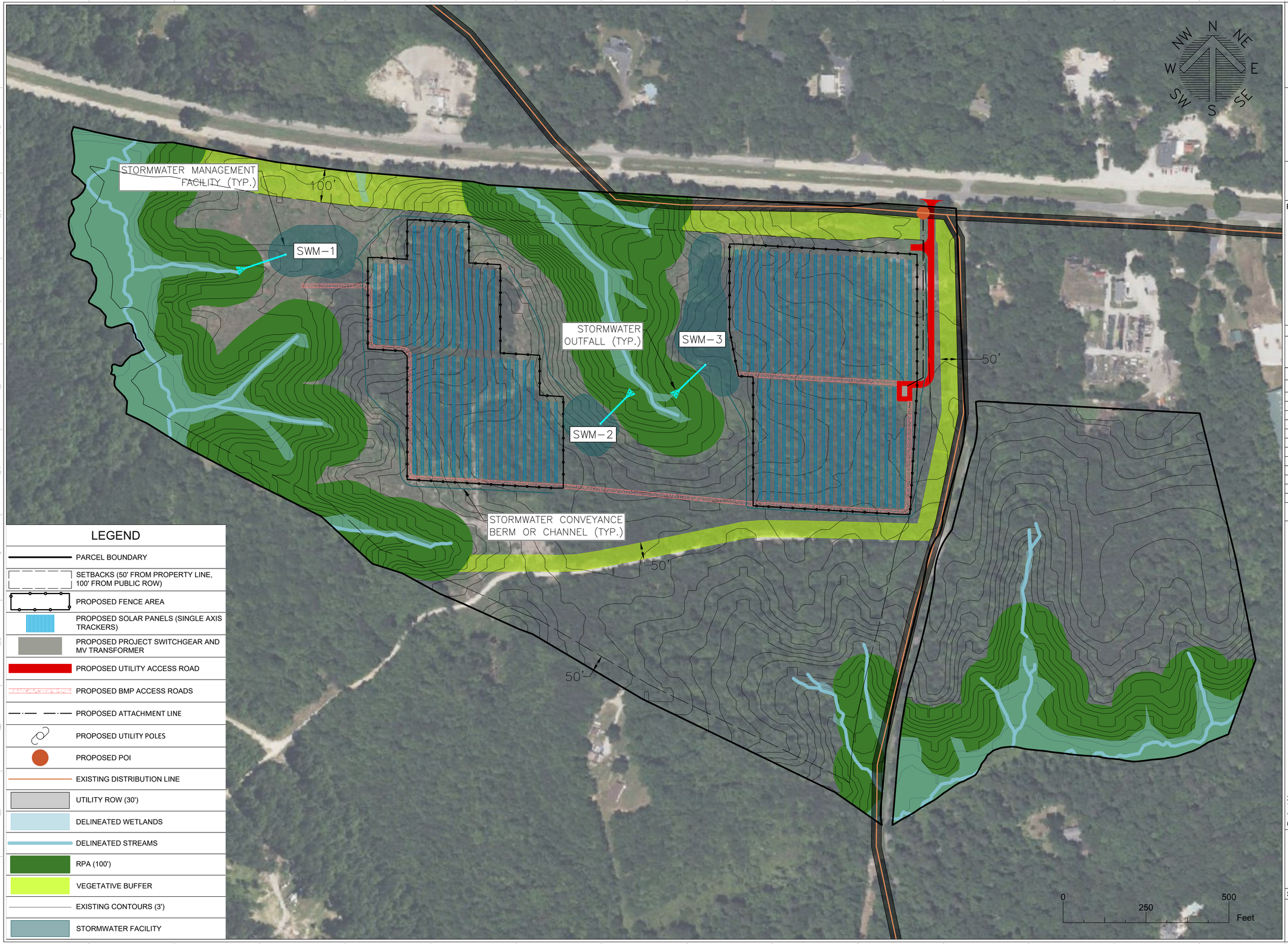
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Sheet Name: MASTER PLAN

Scale:

Project ID: TBD

Sheet No: L1.1



LEGEND

- PARCEL BOUNDARY
- SETBACKS (50' FROM PROPERTY LINE, 100' FROM PUBLIC ROW)
- PROPOSED FENCE AREA
- PROPOSED SOLAR PANELS (SINGLE AXIS TRACKERS)
- PROPOSED PROJECT SWITCHGEAR AND MV TRANSFORMER
- PROPOSED UTILITY ACCESS ROAD
- PROPOSED BMP ACCESS ROADS
- PROPOSED ATTACHMENT LINE
- PROPOSED UTILITY POLES
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HEXAGON ENERGY

HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
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Project Name: HEDERA SOLAR, LLC 3MWac

Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: SITE PLAN

Scale:

Project ID: TBD

Sheet No: L1.2



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HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
Charlottesville, VA 22902
Phone: 434.227.5090
Website: www.hexagon-energy.com

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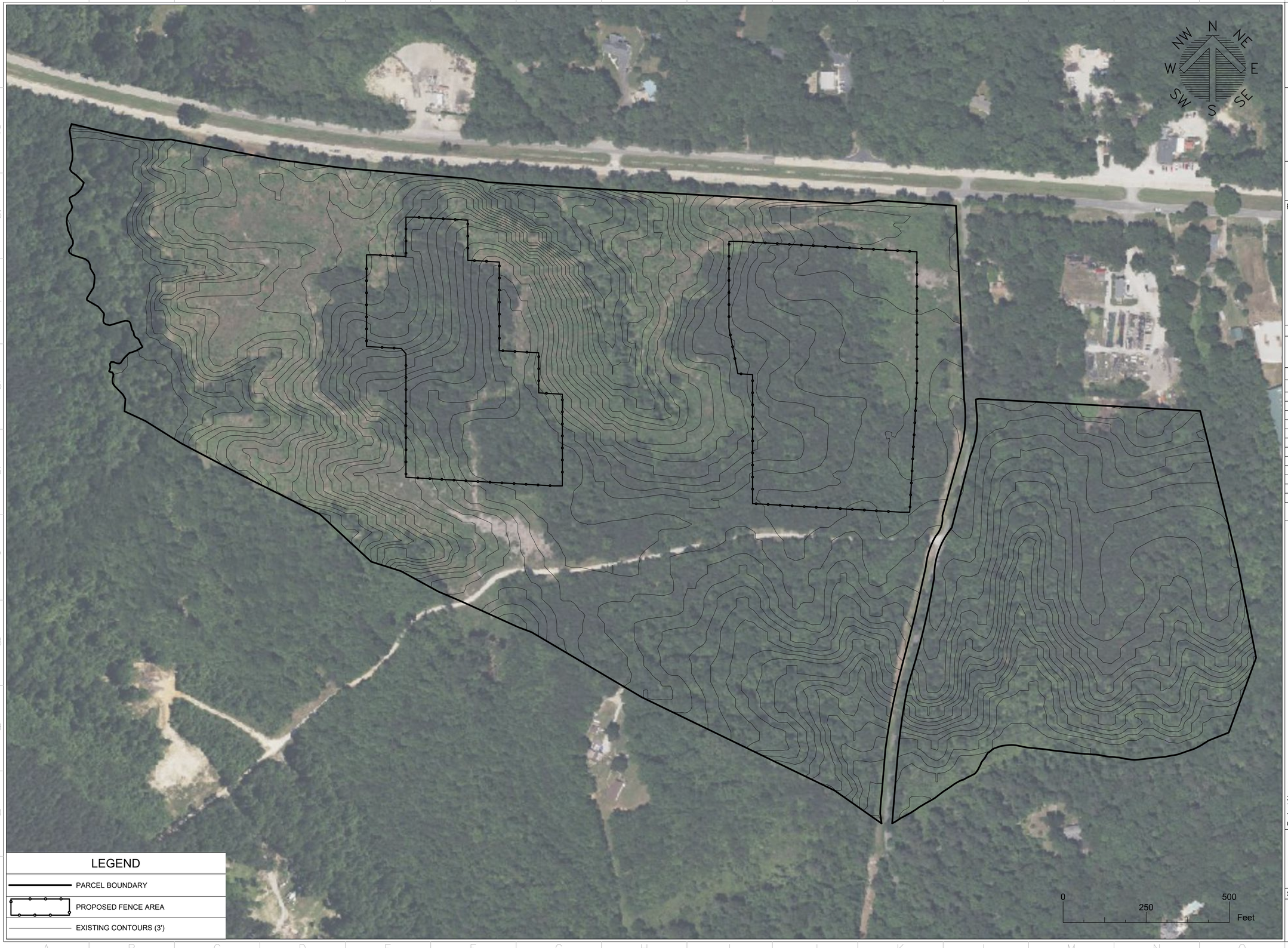
Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: ADJACENT PARCELS

Scale:

Project ID: TBD

Sheet No: L1.3



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HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
Charlottesville, VA 22902
Phone: 434.227.5090
Website: www.hexagon-energy.com

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HEDERA SOLAR, LLC
3MWac

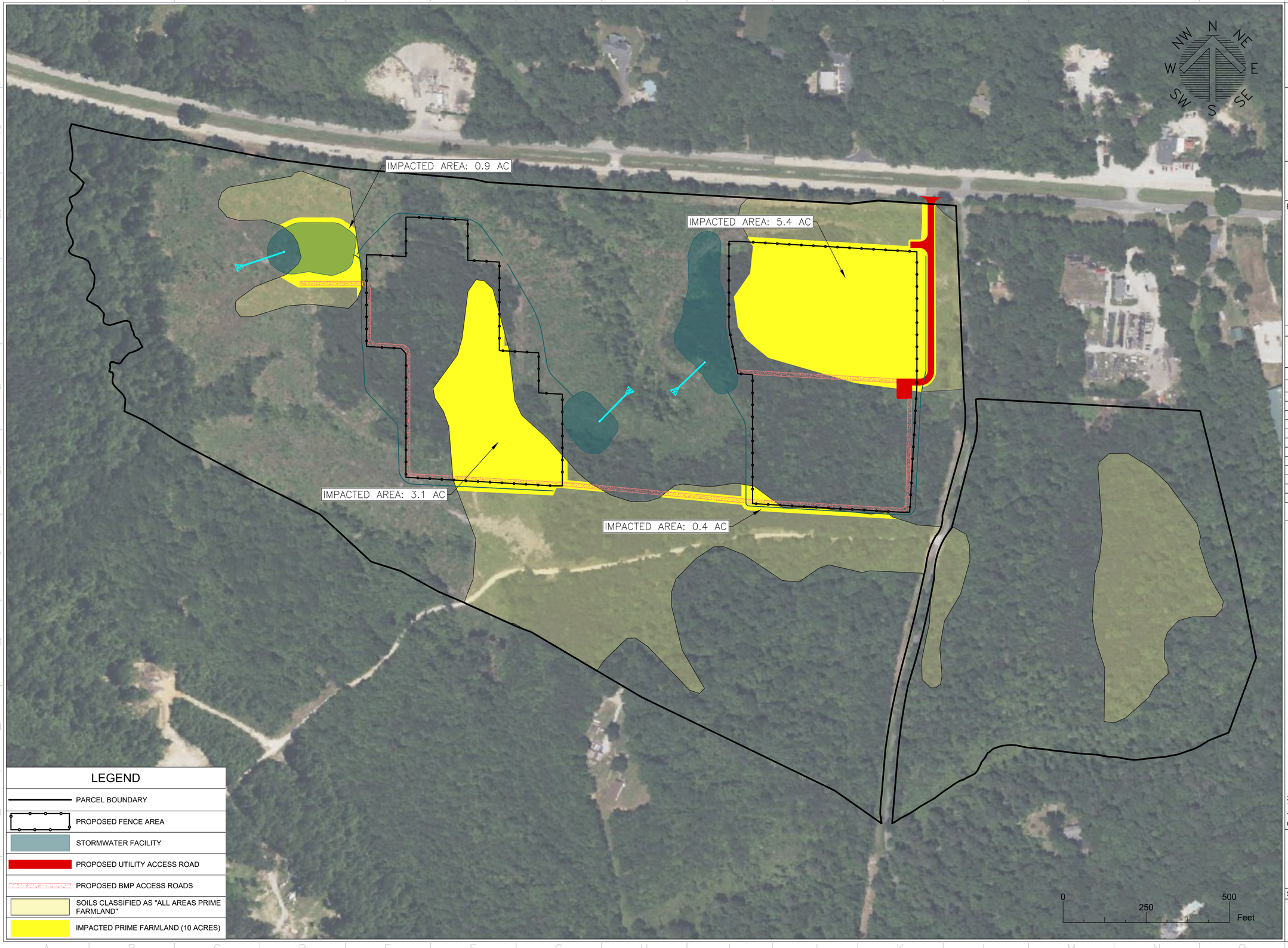
Site Address:
IVY HILL RD
TOANO, VA 23168
37.402° N, -76.843° W

Sheet Name:
EXISTING CONTOURS

Scale:

Project ID: TBD

Sheet No:
L1.4



LEGEND

- PARCEL BOUNDARY
- PROPOSED FENCE AREA
- STORMWATER FACILITY
- PROPOSED UTILITY ACCESS ROAD
- PROPOSED BMP ACCESS ROADS
- SOILS CLASSIFIED AS "ALL AREAS PRIME FARMLAND"
- IMPACTED PRIME FARMLAND (10 ACRES)

HEXAGON ENERGY

HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
Charlottesville, VA 22902
Phone: 434.227.5090
Website: www.hexagon-energy.com

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Project Name: HEDERA SOLAR, LLC 3MWac

Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: PRIME FARMLAND

Scale:

Project ID: TBD

Sheet No: L1.5



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HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
Charlottesville, VA 22902
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1	VC	PRELIMINARY SITE PLAN	5/8/2024
2	VC	INCORPORATE STORWATER MANAGEMENT	5/29/2024
3	VC	UPDATE LAYOUT	6/3/2024
4	VC	ADD PRIME SOILS	6/7/2024
5	VC	ADD DETAILED STORMWATER PONDS	6/20/2024
6	EO	MOVE POI	6/27/2024
7	EO	PERMIT PLAN	7/8/2024
8	EO	ADD BMP ACCESS ROADS	9/19/2024
9	EO	ADD COVER SHEET & REVISE ENTRANCE	10/7/2024
10	EO	REVISE IMPACTED PRIME FARMLAND	10/9/2024
11	EO	ADD REVISED RPA & STORMWATER PONDS	11/6/2024

Project Name: HEDERA SOLAR, LLC 3MWac

Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: HABITAT CORES

Scale:

Project ID: TBD

Sheet No: L1.6

HEXAGON ENERGY

Application for
Hedera Solar
3 Year Special Use Permit

Pursuant to

Code of the County of
James City County, Virginia

July 8, 2024 Initial Submission
November 5, 2024 Resubmission After Comments

Prepared for:
James City County
Planning Commission &
Board of Supervisors
101 Mounts Bay Road
Williamsburg, Virginia 23185

Prepared by:
Hedera Solar, LLC
321 E Main St. | Suite 500 | Charlottesville, VA 22902
Tel: 434-218-0595 | hexagon-energy.com

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1.0 Overview

Hedera Solar – 3MW$_{AC}$

James City County, VA



Hedera Solar is a proposed 3MWac solar energy project, located Northwest of Toano on Richmond Road. The energy produced from the array can power approximately 500 homes in the region

Hedera Solar, LLC (the Applicant), a wholly-owned subsidiary of Hexagon Energy, LLC (Hexagon Energy) is pleased to submit the following application for a Special Use Permit (SUP) for Hedera Solar (the Project). The Applicant proposes developing a three (3) megawatt (MW$_{AC}$) photovoltaic (PV) solar energy generating system. The project footprint (Site) will encompass about 30 acres of Parcels 1110100013 and 1110100024 (the Property), which are cumulatively 101.3 acres. The Property is located at the intersection of Richmond Road and Ivy Hill Road in the Powhatan District of James City County and is zoned A-1 General Agriculture. The Project has been sited and designed in full compliance with James City County's Zoning Ordinance and Virginia permitting and approval requirements.

Hedera Solar is being developed for potential inclusion in Dominion Energy's Shared Solar Program, which will allow low-to-moderate income households in James City County to subscribe to receive clean, renewable electricity and save money on their utility bills. These are community members who face the highest energy burden and who have historically been left out of the clean energy transition.

Hedera Solar will provide over $400,000 in direct and indirect revenue to James City County over the lifetime of the project with minimal to no burden on County resources such as water, sewer, schools, and other public facilities.

Hexagon Energy is using best-practice siting and design standards in coordination with local, State, and Federal regulations to ensure that all environmental standards are met and exceeded during the construction and lifetime of the project. The site design features extensive setbacks and landscape buffers to screen the facility from all points off-site. Similarly, Hexagon Energy has implemented stormwater and erosion and sediment controls in our site design to meet the Department of Environmental Quality guidelines and will exceed these standards by adhering to James City County's Special Stormwater Criteria. The Project is expected to execute an interconnection agreement with Dominion Energy in Q2 2025 and will be subject to Dominion interconnection guidelines for a small-generation facility.

1.1 Applicant & Facility Owner

Hedera Solar, LLC is both the Applicant and facility owner for the Project. Hexagon Energy is based in Charlottesville, Virginia. The Property Owners are Ivy Hill, LLC and Barbara Silverman, and the Operator of the project is not yet known. An Option to Lease agreement has been executed to allow the Applicant to develop a solar array generating 3 MW. Please see Appendix A for the original memorandum of the option to lease agreement with Ivy Hill, LLC and Barbara Silverman. The memorandum was recorded in the James City County Clerk's Office of Williamsburg/James City County on January 18, 2024, and was assigned instrument no. 202401087.

HEXAGON AT A GLANCE

- Established in 2015
- Leadership has been developing energy projects since the early 1990s
- 2,875 MW of energy development experience across 17 states
- Representing over $1.5 Billion USD in invested capital

LOCATION & CONTACT INFO

321 E Main St | Suite 500
Charlottesville, VA 22902
info@hexagon-energy.com

Hexagon Energy is an independent, privately owned energy development firm that believes the path to a clean energy future requires a range of new sources and technologies. We develop projects across six diverse energy solutions with one common goal—powering a clean future. Hexagon Energy has a proven track record of developing safe, reliable, and environmentally responsible projects in the Commonwealth. We are excited to work with James City County planning staff, elected officials, and community members to develop a locally-based solar project.

1.2 Hexagon Energy's Development Experience

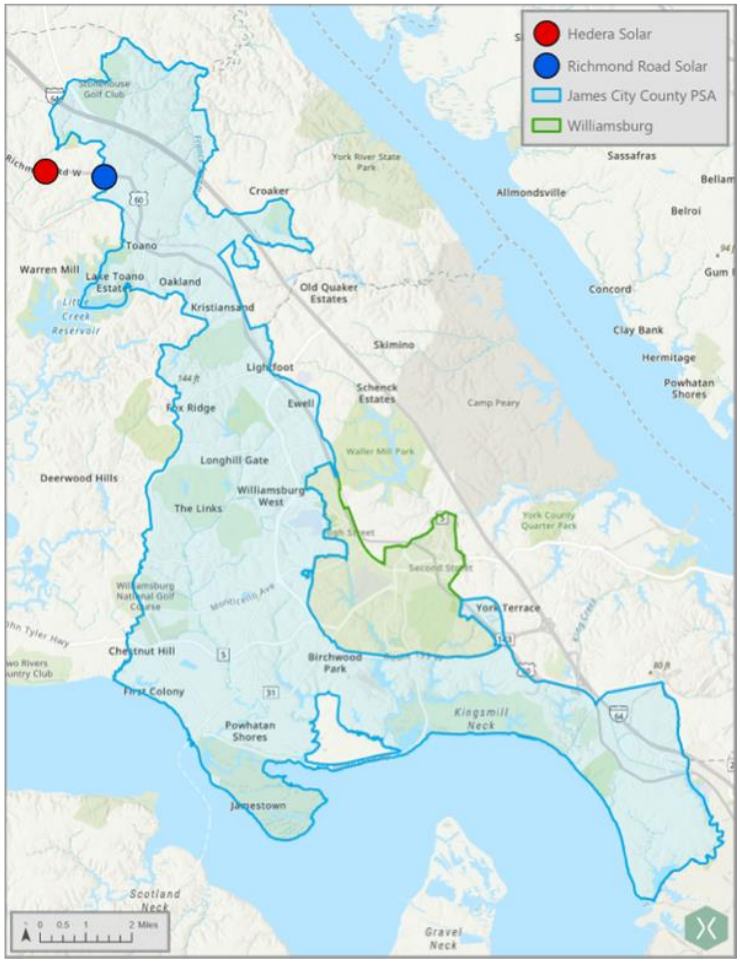
Hexagon Energy's principals have been developing energy projects since the 2000s and have a wide range of experience that guides our work. Over the past 20 years, Hexagon Energy's principals have developed and financed nearly 3,000 MW of operating energy projects in 17 U.S. states, representing over $1.5 billion in invested capital. The following table summarizes the energy development experience of Hexagon Energy's principals, both at Hexagon and prior companies.

TYPE	SINCE	ADVISORY	OPERATING	UNDER DEVELOPMENT
Solar PV	2008	232 MW	603 MWac	3,427 MWac
Wind	2000	400 MW	2,278 MWac	550 MWac
Energy Storage	2013	20 MW	--	375 MWac
TOTAL		**652 MW**	**2,881 MWac**	**4,352 MWac**

Table 1: Hexagon Energy's Project Development Experience

2.0 The Property

Hedera Solar was sited on the Property based on a set of criteria that make it a good location for a solar facility. These criteria include but are not limited to Property size, usable acreage, zoning ordinance alignment, land use considerations, development trends, and infrastructure requirements.



2.1 Current Conditions

The Property is currently undeveloped, vacant land 2.5 miles Northwest of Toano on Richmond Road. The property has been owned by multiple generations of the same family since the 1960s and has historically been commercially timbered. There is a private road, Hill Lane, going through the southern side of the property that serves as an ingress and egress for several neighbors near the Property. As an undeveloped site, the parcel presents a unique opportunity for value creation across multiple stakeholders including the landowner, County, and the larger community.

2.2 Zoning

The Property is zoned A-1 General Agricultural in the Powhatan Voting District. It is located outside of the Primary Service Area (PSA) and has frontage along a Wooded Community Character Corridor, Richmond Road. The property watershed outfall is Diascund Creek and it is located in the Mill Creek Agricultural Forestal District (AFD). 60.6 acres of the property will need to be withdrawn from the AFD in order to receive the SUP. The AFD withdrawal will be submitted in conjunction with the SUP application and will likely be heard at the October Agricultural Forest District Committee meeting. Additionally, the Applicant will submit a boundary line extinguishment application for the two parcels to be dissolved into one. This is required for the Project to become eligible for Dominion's Shared Solar Program. The Property is located in the 2045 Comprehensive Plan Rural Lands area. As a quiet development that requires little maintenance, this Project will protect the rural character of this area while enhancing the viability of the rural economy through low-impact development. Sec. 24-212 of the James City County Zoning Ordinance allows the development and construction of alternative energy facilities in the A-1 General Agricultural zoning district as "Utility Uses". More details on compliance can be found in Section 9 below. Given the location of the Project along a community character corridor and in a Rural Lands designated area, the Project was designed in a way that protects viewshed of neighbors, residents of James

City County, and roadways with existing mature vegetation. Additionally, about 60% of the existing vegetation on the 100-acre property will not be disturbed for the purposes of the Project.

2.3 Land Use Area and Analysis

The Property is currently, and has for the last 60+ years, been used for industrial timbering practices. The last clearing of the property occurred around 2022. The Property has 28.6 acres of Prime Farmland, about 9.9 acres of which will be temporarily disturbed by the Project. Temporary disturbance means that the land will be returned to as close to its original state as possible after the lifetime of the Project. Additionally, by using native pollinator species for ground cover within the disturbed areas, soil health will be maintained throughout the lifetime of the Project. The Property is abutted on one side by Richmond Rd, on the other side of which there are vacant lots, residences, and businesses, on the Eastern Side by Ivy Hill Road, across which there is one residence near our property, and to the South and West by a combination of vacant lots and two properties that have permanent residences on them. The Project is also located 0.95 miles to the West of Richmond Road Solar, approved by the County in October, 2023. Given current development patterns in the area, the property is facing increasing development pressure for conversion into a more intense land use as evidenced by its classification as a Class V Land (Most Vulnerable) in Conserve Virginia's Development Vulnerability Model. As such, the project presents an ideal opportunity to lock the land into low-impact development. As a low-impact land use that will be hidden from view, it would serve to protect the land from more intensive development, such as residential subdivisions, within the Rural Lands Comprehensive Plan 2045 area while also enhancing the viability of the rural economy. At the end of the project's useful life, the landowner may return the land to silviculture or another chosen use. Second, as a low traffic-generating land use, it would place no burden on City transportation infrastructure on a road that is facing increasing congestion due to construction on Interstate 64. Third, as a low-service land use (i.e., placing no burdens on City services such as water, sewer, schools, etc.), the Project would preserve infrastructure capacity for other developments within the PSA. Lastly, it will drive an over 35 times increase in tax revenues generated by the Property, which can be used to fund County services and infrastructure (see Economic Impact Analysis in Appendix L).

2.4 Usable Acres

The Property, at 101.3 acres, is divided into two pieces split by Ivy Hill Road, about 21.9 acres to the east, which will remain undeveloped, and 79.4 acres to the west on which the Project will be sited. The 79.4 acres to the west create an area that is an ideal size for a 3 MW_{ac} solar facility. It can accommodate the required solar infrastructure while allowing for extensive setbacks and avoiding all environmentally, ecologically, and culturally sensitive areas (e.g. steep slopes, delineated wetlands, special flood hazard areas, RPAs, habitat cores, blocks, and corridors, and proximity to NRHP and NRHP-eligible sites, etc.)

2.5 Utility Infrastructure

The Project's location offers direct access to Dominion's existing distribution infrastructure and proximity to the Toano substation on Chickahominy Road. The distribution lines run via an easement through the Property, allowing the point of interconnection to remain on the Property. Both the distribution network and substation feature sufficient available capacity to accommodate

the injection of Hedera Solar's generation production with minimal upgrades, which ensures the financial viability of the project. While the Project is still undergoing the Dominion Interconnection Study process, early conversations with Dominion indicated that enough capacity exists on the local Dominion distribution system that new infrastructure, such as power lines, will likely not need to be installed. Additionally, the Applicant is working with neighbors along Hill Lane, a private road that runs through the Property, to make sure the Project is a good neighbor. The Applicant hopes that neighbors of the Project ultimately get energy as well as a reduction in their electric bill through Hedera Solar, dependent on Hedera Solar's ability to enter the VA Dominion Shared Solar program.

3.0 Potential Development Impacts and Mitigation

3.1 Neighboring Parcels

There are twenty parcels that border or are across the street from the Property. A total of forty-four neighbors that extend beyond the direct border were invited to a community meeting that was held on July 9th, 2024 at the Williamsburg-James City County Regional Library. The neighbors were able to see large-scale maps of the project and ask questions about the design. Frequently asked questions were about the viewshed of the project and the distance of the project from residences. All questions were answered, and no concern was voiced by neighbors to the Developer about the Project. The Project will mitigate impacts to these neighboring parcels by using a combination of naturally occurring and planted vegetative buffering, avoiding the use of the private road, Hill Lane, for construction and site access, and proposing an entrance off of Richmond Road.

3.2 Visual

Given the location of the Project along a community character corridor and in a Rural Lands designated area, the Project was designed in a way that protects viewshed of neighbors, residents of James City County, and roadways. All above-ground infrastructure will be setback about 100' or more from the Property line. All residences except one are at least 400' away from the fenceline of the Project, and only one residence, at 100 Ivy Hill Rd, falls within 400' of the fenceline, at about 236' of setback. In addition to a 236' setback from the Project fenceline, this resident will also have an ensured 50' of mature dense vegetation along Ivy Hill Road to shield their viewshed from the Project. The Applicant is working diligently to understand and meet the needs of this property owner. There have been several attempts at outreach made, including attempts to knock on their door and a few letters sent. The final outreach letter was sent to this neighbor on October 1, 2025 via certified mail, and it was shown as received on the USPS tracking website on October 5, 2024. Details on the outreach to 100 Ivy Hill Road and maps outlining distances from all neighboring dwellings can be found in Appendix R and Appendix T. The Project will be screened from view on all sides, including along Hill Lane, a private road, with at least 50' of existing mature vegetation, adding additional planted vegetation where necessary. Specifically along Richmond Road, the buffer size will be 100'. Because this property is a timber forest, most areas will be screened from the onset of construction.

Northern border with Richmond Road: The vegetative buffer between the fenceline and Richmond Road will be 100' as per the amendment to Ordinance No. 31A-360 adopted on October 8, 2024. The

topography of the Property will also add to the visual buffering from Richmond Road. A 50' wide clearing will be made on the Eastern portion of the Property's road frontage on Richmond Road to make way for the entrance to the Project as well as the 5 utility poles that will be installed to connect to the main distribution power line along Richmond Road. The entrance road and utility poles can be seen in the Master Plan in Appendix B, and will be internal to the site and out of view of residents and those passing by. While the original submission for the Project placed the entrance road off Ivy Hill Road, County Staff advised us to move the entrance to Richmond Road, given the draft Solar Policy guidance that entrances to solar facilities should not be placed on local roads that do not meet VDOT standards, but rather on collector or arterial roads. More information on this can be found in Section 3.4 of this narrative as well as Appendix T. The new entrance road is reflected in the Conceptual Master Plan in Appendix B.

Western Border: The fenceline is setback about 700' from the western property line and will have at least 500' of dense mature vegetation. Due to the wetland and resource protection area, the western boundary is naturally protected from any clearing.

Southern Border: The fenceline is setback about 120' from Hill Lane, a private road that runs through the Property. At least 50' of vegetation will be retained along that road for the benefit of neighbors' viewsheds.

Eastern Border: The fenceline is set back about 130' from Ivy Hill Road. There will be a 50' minimum vegetative buffer along Ivy Hill Road. Part of the remainder of the setback will be used for the entrance road off Richmond Road as well as an internal road leading back to the rest of the facility. Additionally, the part of the entrance road closest to Richmond Road will also hold the above-ground 5-pole interconnection infrastructure necessary for connecting the solar facility to the main power lines along Richmond Road. The internal road was placed in this location to avoid grading steep slopes and to minimize disturbance of sensitive soils.

The setbacks and buffers can be seen in the conceptual master plan in Appendix B. Onsite equipment such as racking and panels have a maximum tilt of only about 8-10 feet measured from the base of the structure to its highest point. There will be no signage on site, except that which is required for safety, security, or requirements for interconnection by Dominion Energy. Lastly, existing slopes will also reduce the visual impacts to adjacent parcels and roads. The visual impact of the Project will be minimal to adjacent parcels and public rights of way.

A visual rendering was completed by an independent consultant showing the view of the project from an aerial and road vantage point. The renderings can be found in Appendix J.

3.3 Noise

From Richmond Road, Ivy Hill Road, Hill Lane, and nearby residences, the array will be inaudible. The Project is planned to feature Sungrow model SG125Hv (125kWac) inverters and DuraTrack HZ v3 cracking equipment that will produce a small amount of sound (<60dBA at 1 meter away) within the Site. At just one meter away, the sound ratings of the inverters are less than outdoor air conditioning units, which are rated at over 60dB. Inverter sound ratings fall to less than 30dB at a distance of 50 feet, which is the background noise level in a rural area. The nearest residence is approximately 250' from the project fenceline and will not be able to hear any equipment.

During the approximately six months of construction, we anticipate an increase in construction noise primarily from delivery of materials and installation of support beams on which the solar panels will be fixed. However, noise-producing construction activities are not constantly ongoing throughout the construction timeline and only occur during short portions of the construction period. We want the Project to be a good neighbor to all, so these noise impacts are mitigated by establishing limits on construction operation hours to daytime hours, see Appendix P.

3.3 Glint/Glare

In addition to being visually screened from nearby residences and roads, the panels are designed to absorb as much sunlight as possible and will be treated with an anti-glare coating. Hexagon performed a glare analysis using an FAA Solar Glare Hazard Analysis Tool (SGHAT), ForgeSolar, which can be found in Appendix G. The analysis concludes that no glare is anticipated from Richmond Road, Ivy Hill Lane, or Hill Lane.

Additionally, Hexagon has utilized the Federal Aviation Administration's online Notice Criteria Tool to determine that the Project does not exceed the notice criteria required by the FAA and does not pose any risk to air traffic. The results of the Notice Criteria Tool are available for review in Appendix G.

3.4 Traffic

During operation, the Project will require very little traffic to the Site, averaging less than two trips per month. During construction, which lasts about three to four months, the intensity of trucks coming in and out of the site will vary, with the majority of trucks coming in the middle months when construction is at its peak. During the first and final months of construction, there will be less than one truck per day entering and exiting the Site. During the peak construction period, which occurs in the one-to-two months in the middle of the construction period, the site is estimated to experience one truck per day delivering materials. To mitigate traffic on Richmond Road, deliveries will be staggered and attempted to be made during non-peak travel periods. In addition to deliveries, the Project is expected to have an estimated 20 employees on-site during the peak period of construction. There is an estimated 14 passenger vehicle trips predicted to occur during the peak period of construction. All construction staging, parking, and assembly areas will be within the project boundaries. For a detailed traffic memorandum identifying routes to the Property and recommendations, see Appendix H. A final Construction Traffic Management Plan adhering to the conditions of this permit will be developed and submitted to James City County for review and approval during Site Plan Approval

Additionally, given that a new road will be built for ingress/egress to the Site, Hexagon has engaged Kimley Horn to prepare an entrance analysis exhibit, see Appendix H. Based on VDOT data for Richmond Road, a 650-foot minimum site distance is required. In order to meet this requirement, the point of entrance will be slightly wider than 50' along the road to ensure site distance upon entering and exiting the Site. The road will narrow to 50' past the entrance. Before final Site Plan approval, VDOT will be engaged to provide final project entrance approval. The Owner of the Project will be responsible for ensuring any upgrades or maintenance to Richmond Road related to the Project entrance

It is also important to note that the original Project entrance was located at Ivy Hill Road. The Developer originally opted for this location to help avoid any traffic disturbance that an entrance on Richmond Road can create. However, based on the draft solar policy, County Staff provided guidance that entrance roads to solar facilities should not be located on local roads or roads that do not meet VDOT Standards and instead recommended Richmond Road as a better fit for the entrance. While the Master Plan in Appendix B shows the entrance on Richmond Road, an alternate entrance exhibit for Ivy Hill Road can be found in Appendix S, along with VDOT site distance analysis and a traffic memo. If the County finds it beneficial to public welfare to place the entrance on Ivy Hill Road, the Developer agrees to this change via a condition of the Special Use Permit and will be responsible for any VDOT upgrades and maintenance of Ivy Hill Road pertaining to the entrance. More information on the change in the entrance road can also be found in Appendix T.

3.5 STORMWATER

A preliminary erosion and stormwater management plan for this Site prepared by Kimley Horn enumerates the existing and proposed land cover of the site and identifies stormwater mitigation techniques that can be employed for this Project, see Appendix I. Stormwater management for this project is being designed to meet the stormwater quantity requirements and stormwater quality requirements of the stormwater regulations as defined in 9VAC25-875 (Code of Virginia). Erosion control and stormwater management facilities are proposed downstream of the proposed improvements. This preliminary plan proposes three stormwater management facilities that will be installed as sediment basins during construction and converted to permanent wet ponds following construction. Stormwater runoff will be conveyed to the wet ponds via ditches and conveyances that are proposed around the perimeter of the project. The wet ponds will be designed to detain increased volumes of runoff and release the runoff at a controlled rate to the adjacent wetlands and stream systems. The ponds will be designed to decrease stormwater peak runoff rate below the allowable rates as determined by state code. Stormwater Quality compliance will be met by determining the required phosphorus load removal using the Virginia Runoff Reduction method. Phosphorus reduction will be met through on-site facilities such as wet ponds, grassed channels, and/or dry swales that will be designed to remove calculated amounts of phosphorous from the stormwater runoff within the project area. Wet ponds are proposed for this preliminary design due to their effectiveness in nutrient/phosphorus removal for larger drainage areas. The wet ponds would be designed to meet the specifications of the VA DEQ BMP Specifications. There are alternative facilities that may be considered during the final site plan review that can also provide sufficient water quality treatment. This preliminary design is intended to provide a feasible option to satisfy water quality and quantity compliance and may change during the final site plan review with approval from the county stormwater review.

The James City County Stormwater and Resource Protection Division provided comments on the preliminary erosion and stormwater management plan for this Site. The Developer updated the stormwater management memo in Appendix I based on these comments and provided specific clarification to several comments in Appendix T.

3.6 Health and Safety

The project will utilize passive photovoltaic (PV) cells consisting of common materials including glass, polymer, aluminum, copper, and silicon semi-conductor material. Solar PV panels function as a solid state, inert crystal composed of non-toxic materials and are most similar to a pane of solid glass. There are no chemicals, fluids, or materials that are capable of entering the environment. The PV and inverter technologies have been studied for over 30 years and are not known to pose any significant health dangers to neighbors. Instead, the reduction in pollution from fossil-fuel-fired electric generators makes solar farms a positive impact on human health.

In May 2017, researchers at NC State University published a detailed review of the Health and Safety Impacts of Solar Photovoltaics. The study found that "[t]hese risks are extremely small, far less than those associated with common activities such as driving a car, and vastly outweighed by health benefits of the generation of clean electricity." The full report can be found in Appendix F, attached.

4.0 Potential Environmental Impact and Mitigation

4.1 Wetlands

Hexagon Energy engaged Kimley Horn to perform a wetlands delineation and field assessment on the property. We have also performed preliminary desktop analysis using the U.S. Fish and Wildlife Service National Wetlands Inventory and FEMA flood zones to identify potential environmentally sensitive areas. Lastly, the wetlands have received their preliminary jurisdictional determination from the Army Corps of Engineers and the RPA were confirmed by Michael Woolson of the James City County Stormwater and Resource Protection division. The wetlands delineation can be found in Appendix C. Hedera Solar is designed to avoid impacting any wetlands, streams, or resource protection areas.

4.2 Wildlife Habitats

The Property has been screened, via the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Consultation System (IPAC System), Virginia Department for Wildlife Resources (DWR), Virginia Fish and Wildlife Information Service, Virginia Department of Conservation and Recreation, Center for Conservation Biology, the Virginia Department of Game and Inland Fisheries (VDGIF), and James City County Habitat Cores map for known critical habitats for threatened and endangered species. All results can be found in Appendix D

The Northern long-eared bat, tri-colored bat, and monarch butterfly were documented on the Official Species list of the USFWS IPAC System as endangered, proposed endangered, and candidate, respectively. The VDGIF Northern Long-eared bat Winter Habitat and Roost Indicator determined that there were no maternity roosts or hibernacula located within the Property or within a 2-mile radius of the Project. Due to the listing of the Northern long-eared bat, and potential uplisting of the tri-colored bat as endangered, Hexagon will comply with time of year restrictions for clearing of the Site for construction. The monarch butterfly species is not listed as threatened and endangered, and there are no time of year restrictions for this species, but the USFWS recommends taking measures to protect the butterfly habitat, including planting pollinator species.

Additionally, the VADCR identified that natural heritage resources, conservation lands, or conservation sites have not been documented within the Property. VADCR shows that there are C4 Moderate ecological cores within the study area (C1 being Outstanding, C5 being General). We plan to follow the guidance provided by VADCR for soil stabilization during construction, and strict adherence to erosion and sediment control measures.

Lastly, the James City County Habitat Cores map found no habitat cores on the Site. There is a small area on the western-most part of the property that has a low-grade habitat core and corridor intersecting it, but that area is within a wetland and will not be disturbed by this project. A map of this area can be found in Appendix B.

4.3 Culturally and Historically Significant Resources

Using the Virginia Department of Historic Resources (DHR) Virginia Cultural Resources Information System (V-CRIS) and National Register of Historic Places (NRHP), we have searched for cultural resources in and around the property up to 0.5 mile. A map of the identified findings is attached in Appendix E. The area of potential effects (APE) was outlined as the 100-acre area of the entire Property, including the 30 acres where ground disturbance might occur. The review identified no archaeological and architectural resources on the Site. There are two architectural and one archaeological resource within the 0.5 mile buffer, none of which have been evaluated by the NRHP for eligibility. One of these architectural resources (DHR ID 047-0083, is a dwelling that was constructed in 1900 to the North of the Property, and the other (DHR 047-5162) is a farmstead that was constructed in 1920 to the east of the Property. The archaeological site (44JC0391) is a Woodland Period lithic scatter. It is the opinion of a professional cultural and historical investigator that the APE has a moderate potential for containing pre-contact period archaeological sites and historic period archaeological sites. However, due to the long history of silviculture disturbance throughout the APE, the investigator evaluates this area as low potential for such sites to retain archaeological integrity. They recommend that Phase 1b archaeological surveys and architectural field surveys be conducted in advance of any construction on the property.

During field work conducted by Hurt and Proffitt for the Phase 1a Cultural and Historical analysis, there was no evidence of cemeteries or graves found on the Property. Upon conducting a personal canvassing campaign of neighbors and property owners along Hill Lane, it was noted by the property owners of 171 Hill Lane that there exist a few family gravesites dating back to the early 20th century on the project parcel. The neighbors identified the red area shown in Appendix E as a probable area for these graves, one for the Robinson family and one for the White family. No such indications were found on surveys or deeds in a title search. A professional archaeologist was sent out on site on June 4, 2024 to try and locate any grave markers, depressions, and ornamental vegetation that could represent unmarked graves. No evidence of graves was observed in that area. The Applicant is working diligently to identify the grave sites and will avoid areas identified as graves for disturbance, construction, and operation. If the graves are identified, the Project will incorporate a cleared pathway for the families to be able to visit these graves.

4.4 Environmentally Sensitive Areas

A Phase 1 Environmental Site Assessment was conducted on the Property. No Recognized Environmental Conditions (RECs) were identified. One abandoned structure was found on the Eastern part of the property and will be avoided or removed. Results can be found in Appendix N.

4.5 Soils

A soil search was done for the Property utilizing the United States Department of Agriculture's Web Soil Survey (WSS) and the James City County Natural Cultural Assets Plan. According to the Agriculture Assets Map, Class 1 and Class 2 soils are considered the highest quality soil for agriculture purposes. Based on the James City County Agricultural Assets Map, less than 1 acre of Class II soils will be impacted. Based on the WSS, 28.6 acres of soil designated as Prime Farmland may be present on the Property, only 9.9 acres of which will be within the limits of disturbance, which includes the fenced area with panels as well as internal roads, stormwater basins, and stormwater drainage ditches. The soils designated as prime farmland will be temporarily disturbed, meaning that after the decommissioning of the Project, the Site will be returned to its previous conditions. It is also important to note that while certain areas are designated as prime farmland on the Property, the Property Owner has not and does not intend to place the Property into a traditional farming use. One of the reasons for this is the non-contiguous nature of the prime farmland designation on the Property due to present wetlands. Similarly, due to the active commercial timbering of the Property, the land has been sprayed with herbicides to promote tree growth, likely depleting the soil of its valuable nutrients. Additionally, the current use of the qualification of "prime farmland" has been applied to sites already developed on the surrounding properties. Multiple residences and commercial properties are within those areas deemed with this qualification. The proposed site work may help in restoring soil health if it was negatively impacted by the previous silviculture work done prior due to vegetation species selection, stormwater drainage, and retention areas. While the Developer understands that avoidance of soils designated as prime farmland is included in the draft solar policy, the placement of the solar facility has been chosen to avoid development on steep slopes and sensitive soils present near wetlands, which provides a longer-term benefit to the welfare of the County's soils. The remaining soils within the undisturbed areas will remain in silviculture and the disturbed soils can return to silviculture use after the Project's decommissioning. The soil survey is available in Appendix E and an exhibit showing disturbed prime farmland can be found in Appendix B.

Hexagon Energy also engaged the Colonial Soil and Water Conservation District at an early stage of the project to discuss soil health. The major concerns that came up during that conversation were compaction of the soil, maintenance of soil health during site preparation, construction, and operations, and choice of vegetation for the site that suits the soil and prevents erosion. With these comments in mind, the Applicant has engaged a consultant, Profile Products, to perform soil tests to provide a better understanding of our Site's soil composition at an early stage. These results allowed the Developer to get a clearer idea of a path for vegetation before, during, and following land-disturbing activities. In order to mitigate the temporary disturbance of soils designated as prime farmland, the Developer will prioritize choosing a land cover seed mix that is native and pollinator-friendly to aid with long-term soil stabilization and nutrient management. We understand the importance of soil health for not only the Project but also the ability of this site to be returned to silviculture activities after the decommissioning of the Project. Per Condition 16 of the Proposed SUP Conditions in Appendix P, a nutrient management plan will also be detailed before site plan approval.

4.6 Forested Areas

Forests have immense ecological benefits, recreational benefits, and intrinsic value. However, when looking at the narrow but important issue of carbon accounting, it is usually not true



that removing trees to build a solar farm negates any emissions reductions from solar generation. One acre of solar panels in the United States usually offsets significantly more carbon dioxide emissions than one acre of planted trees can sequester. Furthermore, while removing trees from forests releases stored carbon, such emissions can be offset by solar energy generation and the resulting reduction in fossil fuel-driven emissions. Based on statistics from the U.S. Energy Information Administration, the Developer calculated the offset differences between keeping the Property in a pine plantation and developing a solar facility and found that over the lifetime of the Project (35 years), over 107,000 metric tons of CO_2 would be sequestered by a solar facility compared to only 24,000 metric tons of CO_2 if it were to remain a pine plantation. More calculations and details on the carbon sequestration benefits of solar development can be found in Appendix Q. Additionally, it is important to note that given the Property's current use as a commercial timber farm, the trees would likely be harvested cyclically irrespective of the solar facility development.

5.0 Facility Description

5.1 General Design

Hexagon Energy proposes to develop and construct Hedera Solar, with a nameplate capacity of up to 3 MW_{AC}. All of the clean energy generated by the facility will be delivered to the Dominion power grid (the Grid) at the existing 34.5 kilovolt (kV) distribution line running along Richmond Road. The proposed electrical grid interconnection will be on the Property on the side of Richmond Road, which can be found in the Conceptual Master Plan (Appendix B).

Hedera Solar will consist of up to approximately 9,660 crystalline silicon solar PV panels. Additional equipment will include single-axis tracker components, DC to AC string inverters, a medium voltage transformer and a control cabinet, project switch gear, a meter, and the interconnection to the existing distribution system. To support the PV panels, the Project will utilize a single-axis tracking system designed to optimize power production of the panels by rotating them to follow the sun. The single-axis tracker design consists of a series of mechanically linked horizontal steel support beams known as torque tubes, with a drive train system. The rows will be placed 21.2 feet apart (center to center) and the panels will cover approximately 16% of the Project area. The racking system will be supported by metal piles driven to a depth of approximately 10 feet. The height of the solar PV panels at full tilt is roughly 8 to 10 feet

5.2 Interconnection

Hedera Solar will feed electricity back to the Toano Substation via circuit 426 of Dominion's distribution system. The point of interconnection (POI) onto the distribution system will be at a point where existing Dominion power lines intersect the Property along US Route 60 (POI: 37.4039, -76.8388). The interconnection agreement from Dominion Energy, the utility, is expected to be executed sometime around May 2025. While the Project is still undergoing the Dominion Interconnection Study process, early conversations with Dominion indicated that enough capacity exists on the local Dominion distribution system that new infrastructure such as power lines will likely not need to be installed.

5.3 Site Access

After conversations with staff about the originally proposed Project entrance at Ivy Hill Road, the Developer has decided to move the entrance shown on the Master Plan to Richmond Road. The reasoning for this amendment is that the draft solar facilities policy recommends use of collector or arterial roads that are up to VDOT standards rather than local roads for entrances to solar facilities. An updated entrance on Richmond Rd would require a 50' wide portion of the buffer along Richmond Road to be removed to accommodate an entrance and VDOT site distance requirements for construction entrances. This can be seen in the updated Master Plan in Appendix B. An updated traffic memo and site distance analysis can also be found in Appendix H.

Hedera Solar's original proposed site access was designed on Ivy Hill Road, as seen in the Exhibit in Appendix S. The location of the site access was chosen in order to reduce the amount of traffic on Richmond Road while avoiding the private road, Hill Lane, that runs through the Property and that several property owners use for access. Additionally, placing the entrance on Ivy Hill Road would also avoid visual impacts to individuals driving on Richmond Road. The developer would also like to note that while the updated SUP Master Plan shows an entrance on Richmond Rd, the Project can still accommodate an entrance on Ivy Hill Rd if that is what the Planning Commission and Board of Supervisors prefer given the benefits listed above. If an entrance on Ivy Hill Road is preferred, we request that the Planning Commission and Board of Supervisors add this change through a condition of the SUP. If the Planning Commission and Board of Supervisors prefer an entrance on Ivy Hill Rd, the developer agrees to bring Ivy Hill Road up to VDOT standards. An exhibit of the entrance off Ivy Hill Rd as well as a traffic memo and sight distance map can be found in Appendix S.

Aside from the entrance road, the Project will also have several small roads within the Project site boundary to allow access to all the equipment and stormwater basins on site. The applicant will continue to coordinate with James City County to finalize a Construction Traffic Management Plan before the commencement of construction and with the Virginia Department of Transportation to ensure compliance with regulations for a low-volume commercial entrance.

5.4 Security, Fencing, and Signage

Making sure the Project is safe for the surrounding community is a top priority for Hexagon. The Site will be fenced in by a 6-foot-high chain-link fence topped with strands of barbed wire to deter any unauthorized access to the site. After construction concludes, the gates will remain locked, and access will be coordinated by authorized operations and maintenance personnel. The Site will also include a "Knox Box" on the gate to provide 24/7 emergency access for fire and police personnel. Ingress and egress will be maintained off of Richmond Road and will ensure suitable access for fire and other emergency vehicles by leaving 18' of cleared area between the photovoltaic array and the fence, and 20' of cleared area between the fenceline and the vegetative buffer. The vegetative surface underneath the panels will be made up of mixed native grasses, the species of which will be chosen before the final site plan approval and will consider fire marshal input on the combustibility of chosen grasses. Lastly, sometime before the completion of construction of the solar facility, the Applicant agrees to provide a site walk-through of the facility to the staff at Fire Station 1 and Fire Administration. This site walk-through would include fire safety training for solar facilities including common risks, electrical hazards, and mitigation. See

Appendix T for a response to the James City County Fire Marshal's Office comments (See Appendix P, Condition 12).

5.5 Vegetative Buffer

The vegetative buffer for the Project will utilize existing, mature vegetation to screen the Project from roads and neighboring parcels. The Property contains dense, mature vegetation throughout the entire property, including Richmond Road, a Community Character Corridor in James City County. In areas where vegetation needs to be supplemented, the Applicant is proposing planting new vegetation. If new vegetation is planted, plant materials will be chosen based on the requirements of Division 4, Section 24 of the James City County Zoning Ordinance and available plantings in local nurseries. The planted vegetation will utilize lower-lying vegetation, reaching a maximum height of about 20 feet in order to ensure that the viewshed is preserved as vegetation matures while also ensuring appropriate output and operation of the solar facility. Any new and existing vegetative buffer will be maintained by the Applicant for the lifetime of the Project.

6.0 Construction

The Project is anticipated to begin construction in Q4 of 2026. During this estimated three-to-six-month phase, Hedera Solar proposes hours of operation for construction activities to be limited to daytime hours Monday through Friday. Parking will be limited to within the Property boundary only in designated areas outside wetlands, streams, and resource protection areas.

It is estimated that about 20 people will be on site daily during the construction period, and details about personnel travel can be found in Appendix H. Materials and equipment will be manufactured off-site but will be delivered to the Site by trucks. Truck delivery and unloading will occur on-site in designated areas. Major materials for construction will be stored on-site in designated areas prior to installation, including PV modules, transformers, inverters, racking, fencing, concrete, steel, communication, and electrical equipment. Truck delivery will be staggered so as not to create traffic and noise.

Following construction, the Project will undergo testing and commissioning in coordination with Dominion Energy. The Project is estimated to commence operations in Q2 of 2026.

Vegetative ground cover will be established across the Site during construction to prevent runoff to the surrounding environment. This ground cover shall be climate-hardy, non-invasive, and include a mix of pollinator-friendly species. The vegetative ground cover will ensure erosion and sediment control throughout the life of the Project. As per Appendix P, a final construction management plan will be submitted and approved by the County before commencement of construction outlining construction timelines, plans, and locations.

7.0 Operations and Maintenance

Once constructed, the Project will require very little traffic to the Site. A maintenance crew will service the inverters and transformers on average once per quarter. The solar panels have very low

failure rates of approximately 1 in 10,000 per year. The Project output is monitored 24/7 remotely and defective panels are easily replaced from inventory stores. If a defective panel does occur, it will be replaced, and the defective panel will be stored off-site or on-site in a fully enclosed hazardous material and chemical storage container that meets Occupational Safety and Health Administration and Environmental Protection Agency Standards as per SUP Condition 9. There will be automatic breakers and reclosers on site as standard protection for this type of electrical system. The Project does not require on-site water or chemicals to keep the panels clean. Rain occurs with sufficient frequency and quantity in James City County to naturally keep the panels clean. Native vegetation, including a mix of pollinator friendly species, will be maintained under and between the panels with periodic mowing during the growing season. The Site maintenance is typically contracted and performed by local companies.

8.0 Removal

The Project will be removed following the conclusion of the operations phase. Facility decommissioning is generally described as the removal of all system components and the rehabilitation of the site to pre-construction conditions. The goal of project decommissioning and reclamation is to remove the installed power generation equipment and return the site to a condition as close to a pre-construction state as feasible. A detailed decommissioning plan and cost estimate for Hedera Solar can be found in Appendix O. This decommissioning cost estimate includes the total cost of removal, not including salvage value of equipment.

Effectively, the decommissioning of the solar plant proceeds in reverse order of the installation.

1. The PV facility shall be disconnected from the utility power grid.
2. PV modules shall be disconnected, collected, and recycled off-site by an approved recycling facility. If no recycling facility is available, PV modules are deemed non-hazardous waste by EPA guidelines and can be landfilled.
3. Above ground and underground electrical interconnection and distribution cables shall be removed and salvaged or recycled off-site by an approved facility.
4. PV module support aluminum racking shall be removed and recycled off-site by an approved recycler.
5. PV module support steel and support posts shall be removed and recycled off-site by an approved metals recycler.
6. Electrical and electronic devices, including transformers and inverters shall be removed and recycled off-site by an approved recycler.
7. Concrete foundations shall be removed and recycled off-site by a concrete recycler.
8. Fencing shall be removed and will be recycled off-site by an approved recycler.
9. The interior roads can remain onsite should the landowner choose to retain them or be removed, and the gravel repurposed either on or off-site.
10. The Project Site may be converted to other uses in accordance with applicable land use regulations in effect at that time of decommissioning. There are no permanent changes to the site, and it can be restored to its original condition including re-vegetation. Any soil removed for construction purposes will be relocated on the site or used for landscaping after construction is complete.

9.0 Regulatory Conformance

Hedera Solar has been designed to comply with James City County's Zoning Ordinance and comprehensive plan guidelines. Pursuant to Virginia Code § 15.2-2232, unless a public utility facility is already shown on a locality's comprehensive plan, the facility may not be constructed "unless and until the general location or approximate location, character, and extent thereof has been submitted to and approved by the [planning] commission as being substantially in accord with the adopted comprehensive plan or part thereof." As described in the following sections, the "location, character, and extent" of Hedera Solar is "in substantial accord with [James City County's] adopted comprehensive plan or part thereof."

Hexagon is also aware that James City County is currently working on instituting a new Solar Facilities Policy into their code. We have made sure to address all aspects in our site design to be in substantial compliance with proposed policy guidelines, as seen in Table 3.

9.1 Conformance with Zoning Ordinance

The Property is currently zoned A-1 General Agriculture, and therefore alternative energy facilities are allowable within the A-1 General Agricultural zoning district with a Special Use Permit as a "Utility Use" per James City County zoning ordinance, Sec 24-212.

Ordinance Alignment: Section 24-23. Hedera Solar is fully aligned with all guidelines established in Section 24-23 of James City County's zoning ordinance.

Table 2. Ordinance Alignment Section 24-23

Conformance	Regulation	Appendix
24-23 (1a) 1a	Traffic Impact Analysis	Appendix H
24-23 (1a) 1b	Water and Sewer Impact Study	Study Waiver Request Appendix K
24-23 (1a) 1c	Environmental Information	Appendix D
24-23 (1a) 1d	Public Facilities Report	Study Waiver Request Appendix K
24-23 (1a) 1e	Additional On-Site and Off-Site Public Facilities or Services	Study Waiver Request Appendix K
24-23 (1a) 1f	Phase 1A Archaeological Study	Appendix E
24-23 (1a) 1g	Preliminary Natural Resources Inventory	Appendix E
24-23 (1a) 1h	Fiscal Impact Analysis	Appendix L
24-23 (1a) 1i	Parks and Recreation Information	See Waiver Appendix K
24-23 (2)	Master Plan	Appendix B
24-23 (3)	Other submittal requirements	See Narrative
24-23 (4)	Application Fee	Submitted upon application submittal
24-23 (5)	Additional Requirements	Appendix M

City County Code of Ordinances Chapter 24, Article 1, Section 24-9 Special Use Permits, James City County Planning Commission and Board of Supervisors outlines the considerations behind the evaluation of Special Use Permits.

Table 3. Solar Facilities Policy Alignment

Conformance	Regulation	Appendix
Section 2	Large utility-scale solar facilities should be located on 20 acres or more of total fenced area. They should be located outside the PSA in the General Agricultural (A-1), Rural Residential (R-8), or Public Land (PL) zoning districts. Total project area should not exceed 300 acres.	17 acres of total fenced area with X acres of disturbance including roads and stormwater facilities, located outside the Primary Service Area (PSA) on a General Agricultural (A-1) zoning district. See Appendix B of the narrative.
Section 4	Solar facilities should not be located within 400 feet of dwellings or within 250 feet of historic, cultural, recreational, special flood hazard areas, and environmentally sensitive areas and resources. Solar facilities should incorporate appropriate setbacks,	Setback distances met for all but one dwelling. This issue is addressed in Section 3.2 of this narrative as well as

	buffers, and screening to address proximity to the above-named areas.	Appendix R and Appendix T.
Section 5	Solar facilities, including fencing and support equipment, should be fully screened from ground-level view by vegetated buffers at least 50 feet in width from adjacent properties and at least 100 feet in width from public rights-of-way.	See Appendix B and Section 3.2 for buffer distances. Additionally, see Appendix T for changes to buffer distance recommended by staff.
Section 6	There should be a minimum distance of one mile between fenced areas of separate solar facilities; however, consideration may be made for a closer distance based upon the size, scale, and design of a solar facility and the overall suitability of a given site.	The fenceline 0.95 miles away from nearest approved solar facility. See Appendix T for further information on this issue.
Section 7	If a solar facility consists of multiple parcels, solar panels included as part of the same solar facility should be sited on contiguous parcels to limit project fragmentation and viewshed impacts.	Parcels 1110100013 and 1110100024 are contiguous. Hexagon is in the process of dissolving these parcels into one as well.
Section 9	Solar facilities should be designed to conserve and protect habitat cores, blocks, and corridors connecting habitat areas. Any disturbance of these areas should be adequately mitigated, and disturbance of more than 20 acres of these areas is discouraged.	Not located in habitat cores. See Appendix B for Conceptual Plan Map
Section 10	Solar facilities should avoid, to the maximum extent possible, the use of land identified as prime farmland by the United States Department of Agriculture. Any disturbance of these areas should be adequately mitigated, and disturbance of more than 50 acres is discouraged.	28.6 acres of prime farmland on the Property and only about 15 acres of prime farmland impacted by the solar panels, internal roads, and stormwater facilities. See Section 4.5 of this narrative and Appendix T for further information on this issue.
Section 11	Solar facilities should include corridors to allow for the movement of wildlife across the solar facility , and the latest guidance from state environmental agencies should be considered.	No habitat corridors are impacted.
Section 12	The closest point of any solar facility should be located within two miles of an existing transmission line within the County or an adjoining locality. Any generation lead lines or electrical lines to connect noncontiguous portions of a solar facility and/or	Existing transmission lines run through the Property, see Appendix B.

	leading to a solar facility's substation or point of interconnection should be located underground.	
Section 13	Applications for solar facilities should identify existing electric distribution or transmission infrastructure that may need to be upgraded for the solar facility.	The project is still in the Dominion Interconnection Study Process. As mentioned in Section 5.2 and Appendix T, latest updates from Dominion indicate no distribution or transmission infrastructure upgrades based on available grid capacity.
Section 14	Solar facilities are encouraged to allow for the continued residential, agricultural, commercial, industrial, or recreational uses within project sites.	Eastern portion of property that is not being developed will continue being utilized for commercial timber use.
Section 15	Applicants for solar facilities should provide mitigation strategies for noise and traffic impacts which should include general traffic plans and designated hours for construction and delivery of materials.	See Appendix H and conditions of Appendix P.
Section 16	Solar facilities should have principal access from roads meeting Virginia Department of Transportation ("VDOT") standards. While collector or arterial roads are preferred, access from local roads may be considered.	Entrance was moved to Richmond Rd following conversations with staff (Appendix B, Appendix H, and Section 5.3 of narrative). Access off Ivy Hill Road is possible if preferred by the County. See Section 5.3 and Appendix S and T for more details on entrance road choice.
Section 17	Solar facilities should provide for economic returns beyond those which could otherwise be anticipated for a given site.	Appendix L
Section 18	Solar facility applicants should discuss and negotiate a siting agreement with the County.	See Appendix N, Condition 2.
Section 19 (a)	A construction management plan outlining, at a minimum, the anticipated construction schedule, phasing plan, hours of construction, noise mitigation measures, parking, and traffic control plans.	See Section 3.4 of narrative, Appendix H, Section 6 of this narrative, and Appendix N, Condition 10

Section 19 (b)	Plans for addressing erosion and sedimentation, grading, and stormwater management.	See Appendix I
Section 19 (c)	A landscape plan outlining existing vegetation and the limits of proposed clearing, buffers, screening, and plant materials and species. It should also include a report describing and addressing the viewshed impacts of the facility.	See Appendix B and Appendix J.
Section 19 (d)	A report inventorying wetlands, Resource Protection Areas, streams, floodplains, forested areas, and agricultural soils on the proposed facility site.	See Appendix B, C, and E

9.2 Conformance with Comprehensive Plan

The character and extent of Hedera Solar are substantially in accord with the James City County 2045 Comprehensive Plan. Hedera Solar has been developed in accordance with guidelines relevant to the project and community's vision for growth. Hedera Solar is substantially aligned with 29 guidelines. As such, the "location, character, and extent" of Hedera Solar is in "substantial accord with the adopted comprehensive plan or part thereof."

Conformance	*Regulation*	*Appendix*
Chapter 1: Intro – A Community that Values its Rural Landscape **Page 4**	The greatest reserve of rural areas, however, continues to be outside of the PSA and these areas are traditionally designated as the County's "Rural Lands." Both in this planning process and during outreach in prior comprehensive plans, the citizens of James City County have repeatedly emphasized the great value they place on their rural landscapes, including the high premium citizens put on the quality of life that is derived from the County's pristine natural resources, protected open spaces, scenic rural vistas, and historic and traditional small town and village community character. Many are concerned that the pace, pattern and character of new growth and development may harm this treasured character of the County and many expressed a strong desire both to limit the pace and amount of new development and to direct it away from the rural areas that they value so highly.	The PSA is defined as the area that is "presently provided with public water and sewer and high levels of public services, as well as areas expected to receive such services over the next 20 years," (page 287). It is clear that growth is a major concern of the Comprehensive Plan, and the PSA was created as a way to limit that growth to certain areas. By way of the definition of the PSA, a project such as this one is not the type of development the creation of the PSA is trying to control, such as residential development. It does not require public or private water or sewer, generates minimal traffic during operation, does not require any public services such as schools or emergency response. For this reason, this project is perfect for placement outside of the PSA. Additionally, the Project's extensive setbacks and buffers with natural and planted vegetation will maintain the viewshed of public roads and neighboring properties and will help maintain the rural character of the community.
Chapter 5: Environment Goal – ENV **Page 140**	Continue to improve the high level of environmental quality in James City County and protect rural and sensitive lands and waterways that support the resiliency of our natural systems for the benefit of current and future generations.	Hedera Solar is designed and will be constructed in a way that avoids wetlands and floodplains and protects the environmental quality of the land and waterways in James City County. The facility will generate clean, renewable energy that James City County residents will use and reduce harmful emissions affecting the County from fossil-fuel electric generation.
Strategies & Actions – ENV 4 **Page 145**	Work with the private sector and other governmental entities such as HRPDC and the State through both regulation and non-regulatory techniques to mitigate and adapt to the effects of climate change.	Hexagon Energy is a private-sector company developing clean energy in the Commonwealth. In accordance with the Virginia Clean Economy Act, this Project will help James City County do its part in participating in Virginia clean energy policy.
ENV 4.6 **Page 146**	Investigate ways to amend the County Ordinances to address alternative energy production, and to amend ordinances or include special use permit conditions that protect and enhance natural resources on alternative energy production sites.	Hedera Solar is sited and designed with the proposed Solar Facilities Policy in mind. Hedera Solar will protect and enhance natural resources of James City County by generating renewable energy without creating the harmful emissions that come with fossil-fuel

		energy generation and by virtue of its site and design.
ENV 4.6.1 **Page 146**	In Ordinances or as development approval conditions, include provisions to minimize clearing of forested land.	Hedera Solar is located on land that is currently, and has previously been used for industrial timber practices by the previous landowner. It is designed to impact only about 30 acres of the total 100 acres of existing forest, which will continue to be used for industrial timber throughout the lifetime of the project. Tree clearing will be kept to a minimum, and additional trees will be planted to add to the vegetative buffering where needed.
ENV 4.6.2	In Ordinances or as development approval conditions, implement best practice documents on the inclusion of native pollinator plants.	The Project is designed to include native pollinator seed mixes and vegetation both under the panels and in the supplemented vegetative buffering.
Chapter 10: Land Use – Key Planning Influences, Growth Management – Rural Lands Protection **Page 294**	The areas outside of the PSA are in large part designated as Rural Lands on the Future Land Use Map. While areas with this designation are predominantly known for agricultural and forestal activities, they also contain lands that are vital to the broader environmental health of the County, such as natural areas, extensive Resource Protection Areas (RPAs), aquifer recharge areas, and the headwaters for important watersheds. Land preservation, especially of prime farmland soils, is of utmost importance in this area.	Once operational, the Project will serve as an aquifer recharge zone. Stormwater and erosion control facilities will ensure runoff rates do not exceed relative to the current use. Resource Protection Areas (RPAs) within the site will remain undisturbed. The project's 30-40 year lifespan will allow the protection of the land from other developments and impacts on prime farmland are minimized to about 15 acres, benefiting the environmental health of James City County.
Rural Land Tools **Page 295**	Enhancing the Viability of the Rural Economy a. Taxing Incentives (ex. Land Use Value & Agricultural and Forestal Districts) Retaining Rural Character a. Service boundaries (ex. Primary Service Area policy)	This Project enhances the viability of the rural economy by allowing a local landowner to establish a land use on their property that alleviates financial burden to monetize the land from residential or commercial development. Solar facilities do not place additional financial burden on County infrastructure and facilities, such as water and sewer, helping minimize other development that may impact the rural character of the community while providing economic gain to both a County landowner and County itself.
Chapter 10: Land Use – Rural Lands Designation Description – 2. Recommended Uses **Page 321**	Appropriate primary uses include traditional agricultural and forestal activities, but also innovative agriculture, horticulture, silviculture, specialty or niche farming, commercial and non-commercial equine opportunities, agritourism, rural-based public or commercial recreation, rural-support businesses and certain public or	Per James City County zoning ordinance, Sec 24-212, the Project is considered a "Utility Use" that fits under "certain pubic or semi-public and institutional uses" of this Chapter. The Project's site and design, specifically its emphasis on setbacks, non-invasive

	semi-public and institutional uses that require a spacious site and are compatible with the natural and rural surroundings.	road choice, and buffers, make it compatible with the natural and rural surroundings of the community.
	Retail and other commercial uses serving Rural Lands are encouraged to be located at planned commercial locations on major thoroughfares inside the PSA. However, appropriately-scaled and located direct agricultural or forestal-support uses (including agri-business and eco-tourism), home-based occupations, or certain uses which require very low intensity settings relative to the site in which it will be located may be considered on the basis of a case-by-case review, provided such uses are compatible with the natural and rural character of the area and are in accordance with the Rural Lands Development Standards. These uses should be located in a manner that minimizes effects on agricultural and forestal activities, and where public services and facilities, especially roads, can adequately accommodate them.	Hedera Solar is a low intensity development that is in compliance for the goals of the Rural Lands in James City County and will help promote the rural character of the community. The project will be screened from view from all nearby roads, including Community Character Corridor Richmond Road, and nearby properties. It will be a quiet neighbor that benefits adjacent agricultural and forestall uses through its low-impact installation, operation, and decommissioning.
Chapter 10: Land Use – Rural Lands Development Standards – 4. Use and Character Compatibility **a. Uses in Rural Lands should reflect and enhance the rural character of the County. Particular attention should be given to the following:** **Page 321**	i. Locating structures and uses outside of sensitive areas;	The Project is located entirely outside the Resource Protection Area ("RPA") and no other environmentally sensitive areas have been identified in the site.
(a)	ii. Maintaining existing topography, vegetation, trees, and tree lines to the maximum extent possible, especially along roads and between uses;	The grading of this Project is kept to a minimum and the project will retain significant existing vegetation for the buffer and undisturbed areas of the Property.
(a)	iii. Discouraging development on farmland, open fields, scenic roadside vistas, and other important agricultural/forestal soils and resources;	The Project impacts minimal agricultural soils of prime farmland designation and will plant native pollinator friendly groundcover underneath the panels and within other disturbed areas to the extent possible. The natural mature vegetation along Richmond Road will remain and viewshed of those passing on Richmond Road and Ivy Hill Road will not be compromised. The proposed use

		is temporary, and upon decommissioning, the property can go back to silvicultural use. Additionally, due to the negative effects of herbicides used in commercial timbering, the native pollinator groundcover of thesite
(a)	iv. Encouraging enhanced landscaping to screen structures located in open fields using a natural appearance or one that resembles traditional hedgerows and windbreaks;	Through existing mature vegetation and supplemental planting, the entirety of the solar facility will be screened from the view of nearby roads and properties.
(a)	v. Locating new driveways or service roads so that they follow existing contours and old roadway corridors whenever feasible;	The new proposed access road will flow off of Richmond Road adjacent to Ivy Hill Road. The road will follow VDOT regulations for low volume construction entrances and will allow for a safe entrance onto the property off of an arterial road without compromising the neighbor's private access via Hill Lane and creating traffic throughout the area.
(a)	vi. Generally limiting the height of structures to an elevation below the height of surrounding mature trees and scaling buildings to be compatible with the character of the existing community;	The panels will not reach higher than about 8-10 feet in height and will not reach above the existing mature vegetation and planted vegetation once mature.
(a)	vii. Minimizing the number of street and driveway intersections along the main road by providing common driveways	The proposed entrance off of Richmond Road will seamlessly connect both arrays and the point of interconnection while avoiding using private shared driveways. The Applicant commissioned a traffic impact study and sight line analysis for the entrance seen in Appendix H and will coordinate with VDOT to fully comply with parking and entrance requirements.
(a)	viii. Utilizing lighting only where necessary and in a manner that eliminates glare and brightness.	There will be no permanent lighting as part of this Project.
(c)	c. Site more intensive uses in areas where the existing road network can accommodate the additional vehicle trips without the need for significant upgrades or modifications that would impact the character of the rural road network.	The proposed entrance off of Richmond Road is designed to ensure safe access to the facility without obstructing the neighbor's access road, Hill Lane. VDOT will continue to be engaged throughout the site plan approval process to comply with new road building and entrance requirements.
Chapter 10: Land Use – Goals, Strategies, & Actions	Achieve a pattern of land use and development that reinforces and improves the quality of life for citizens by encouraging infill, redevelopment, and adaptive re-use within the PSA; limiting	The Project will improve air and water quality for the residents of James City County without drawing on resources such as water, sewer, and roads. This

Goal (LU) **Page 340**	development on rural and natural lands outside the PSA; and achieving the other eight goals of this Comprehensive Plan.	type of use for the Property helps protect from more intensive and permanent developments such as residential, outside of the PSA, and will allow the continuing of silviculture activities after the decommissioning of the Project.
Strategies & Actions – LU 1 **Page 340**	Promote the use of land in a manner harmonious with other land uses and the environment.	Hedera Solar is a quiet and unobtrusive neighbor that will not be visible to any passersby or neighbors due to its setbacks and mature vegetative buffers. It will not create traffic on neighboring roads and will be compatible with nearby land uses.
LU 1.4 **Page 240**	Require that any development of new public streets, public parks or other public areas, public buildings or public structures, public utility facilities, or public service corporation facilities, inside or outside the Primary Service Area (PSA), be subject to individualized review as provided under Section 15.2-2232, Legal Status of Plan, of the Code of Virginia, as amended.	Hedera Solar is substantially in accord with the James City County 2045 Comprehensive Plan and will undergo full review by the Planning Commission. Two other small solar facilities of similar size and design were approved on A-1 zoned land outside of the PSA in 2022 and 2023.
LU 1.6 **Page 340**	Explore emerging technologies in the renewable energy industry, with the intention of protecting the County's unique rural character, preserving natural resources, and mitigating impacts to neighboring properties.	This Project provides an opportunity for the County to meet this goal. The Project is designed with preservation of rural character of its surroundings in mind. Hedera Solar will provide clean renewable energy to the County while having minimal impact on natural resources, mitigating stormwater, and being hidden from the viewshed off its surrounding roads and properties.
LU 6 and LU 6.1 and LU 6.1.4 **Page 344**	Enhance and preserve the agricultural and forestal economy and retain the character of Rural Lands and predominantly wooded, natural, and small-town character of the County. Promote the economic viability of traditional and innovative farming and forestry as industries. As resources allow, support implementation of the recommendations in the Strategy for Rural Economic Development to maintain and create viable economic options for rural landowners.	The Project will preserve the forestal economy and promote economic viability of traditional forestry by leasing about half of the area of the entire Property, providing necessary returns to the landowner to retain the Property in the family and protect it from other, more intense developments. After the Project's decommissioning, it can be returned to its previous use of silviculture. Through its design and buffering, the Project will simultaneously protect the wooded, natural, and small-town character of the County.
LU 6.1.3 **Page 344**	Continue to update the Zoning Ordinance list of permitted and specially permitted uses in the A-1 zoning district. Investigate adding a development standards policy for those uses that might benefit from a rural location. Continue to look at non-residential uses and development standards that may be appropriate, such as agri-business, eco-	This Project is an allowed use in the A-1 General Agriculture zoning district under 'Utility Uses' of Sec 24-212 of James City County's zoning ordinance with a Special Use Permit. A solar facility such as this one produces green-energy because it is an

	tourism, or green energy uses, and uses related to projects that are identified by the Strategy for Rural Economic Development.	alternative source of energy that does not harm natural resources and does not produce carbon via its operation.
LU 6.1.6 **Page 345**	Protect farming and forestry uses from conflicting activities by encouraging buffers and open space design and by raising awareness among new rural land purchasers about existing farming and forestry uses in the County.	This Project protects the forestry occurring on this property by ensuring the financial viability of owning this land to the landowner. The Property can return to its previous silvicultural use after decommissioning due to the low-impact and low-intensity nature of this development.
LU 6.2 **Page 345**	Residential development is not a recommended use in Rural Lands. Creation of any residential lots should be in a pattern that protects the economic viability of farm and forestal assets, natural and cultural resources and rural character. Amend the Subdivision Ordinance, Zoning Ordinance, utility regulations, and related policies to promote such an overall pattern. Consider providing more than one option, such as the following, so long as an overall very low-density pattern can be achieved, and the design and intensity of the development is consistent with the stated Rural Lands designation description and development standards and available infrastructure.	Similar to LU 6.1 and 6.1.4, this Project will help protect against more intensive and permanent development such as subdivisions or similar residential development outside the PSA and in Rural Lands. Unlike residential development, this Project can be decommissioned and the state of the Property returned to close to its previous use.

10.0 Public Benefit

10.1 Revenue for a rural landowner

Hedera Solar will be sited on private land that has been in the same family for over 60 years. It will generate significant lease payments for its property owners and enable them to keep the property within their family for future generations. It is within their rights to use their property as they see fit given that this use poses no adverse impacts to its neighbors with traffic, pollution, noise, odor, or dust.

10.2 Direct Revenue to the County

Over its 40-year lifetime, the project will generate significant revenue for James City County through reassessment of real property, permitting fees, and other spending generated from the construction of the Project. The Project will additionally generate revenue via either a voluntary revenue share payment or taxation of associated capital investments (machinery and tools) on the property. Based on the reassessment of property alone, county real estate tax revenue from the project is estimated to be over $130,000 in real property tax revenue. If the County opts to allow the applicant to pursue a voluntary revenue share agreement pursuant to Code of Virginia Section 15.2-2288.8(b), the Project will provide a $1,400 per megawatt AC payment annually, totaling about $351,000 in revenue over 35 years when combined with the real property tax revenue. Alternatively, if the County pursues taxation of capital investment, the total revenue from taxation



of capital investment and real property taxes will be about $530,000 over the course of 35 years. More details on the calculations can be found in Appendix L.

Lastly, it is important to note that these new revenues come with no corresponding demands on the County services and facilities (water, sewer, schools, roads etc.) and no impact on the capacity for future developments in the area.

10.3 Indirect Revenue to the County

In addition to direct County revenues that can be invested in schools, first responders, and other services, Hedera Solar will provide a range of secondary economic benefits to James City County. The Project represents an $8.3 million capital investment comprised of architecture, engineering, site preparation, other construction and development costs, and capital equipment and will have about 20 people working on site at its peak construction. Local materials and labor will be used for construction and maintenance to the extent that they are available. Hexagon Energy is already making efforts to connect with local subcontractors who specialize in a variety of work related to solar facility construction and maintenance. We are working to get these local companies and individuals on approved vendor lists so they are able to bid in and provide local work to the Project when the Project is ready for construction. Additionally, the Project will generate indirect spending at local businesses (hotels, restaurants, entertainment, and materials suppliers). Additional information can be found in appendix L

Planning Commission Determination Request

Hedera Solar requests that the Planning Commission affirms that the project has been designed to be in substantial accord with the Comprehensive Plan and conform with all requirements set forth in the County's Zoning Ordinance. The Applicant, Hedera Solar, LLC, requests that the Planning Commission makes this determination pursuant to VA Code § 15.2-2232 in one of three ways:

TO RECCOMEND APPROVAL AS IS (please say the following):

"I move that the Planning Commission adopt to forward the application for Hedera Solar to the James City County Board of Supervisors with a favorable recommendation, as it complies with the requirements of the Zoning Ordinance and is substantially in accord with the Comprehensive Plan."

TO RECCOMEND APPROVAL WITH CHANGES (please say the following):

"I move that the Planning Commission adopt to forward the application for Hedera Solar with the following changes: _____ to the James City County Board of Supervisors with a favorable recommendation, as it complies with the requirements of the Zoning Ordinance and is substantially in accord with the Comprehensive Plan."

TO RECOMMEND DENIAL (please say the following):

"I move that the Planning Commission adopt to forward the application for Hedera Solar to the James City County Board of Supervisors with an unfavorable recommendation for the following reasons:

Appendix A: Memorandum of Option Signed

Enclosed.

PREPARED BY AND RECORDING REQUESTED BY AND WHEN RECORDED RETURN TO:

Hexagon Development, LLC
Attn: Legal
321 E. Main St., Suite 500
Charlottesville, VA 22902

(Space Above for Recorder's Use)

Parcel ID: 1110100013, 1110100024
Consideration Amount: $3,700

MEMORANDUM OF OPTION AGREEMENT FOR SOLAR ENERGY SITE LEASE

THIS MEMORANDUM OF OPTION AGREEMENT FOR SOLAR ENERGY SITE LEASE (this "Memorandum") is made and entered into as of November 21st, 2025 by and between Ivy Hill L.L.C. and Barbara L. Silverman, ("Owner-Grantor"), and Hexagon Development, LLC, a Delaware limited liability company ("Developer-Grantee").

Recitals

A. Owner-Grantor and Developer-Grantee are parties to that certain Option Agreement for Solar Energy Site Lease, dated concurrently herewith ("Option Agreement"), pursuant to which Owner-Grantor has granted to Developer an exclusive option to lease that certain real property more particularly described on Schedule "1" attached hereto (the "Property").

B. Owner-Grantor and Developer-Grantee now desire to provide for public notice of the existence of the Option Agreement and Developer's rights thereunder.

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. Grant of Option. Owner-Grantor hereby grants to Developer-Grantee the exclusive option to lease the Property (the "Option") upon the terms and subject to the terms and conditions set forth in the Option Agreement.

2. Term of the Option. Subject to the terms and conditions set forth in the Option Agreement, the term of the Option expires and this Memorandum will automatically terminate and be of no further force or effect as of November 20th, 2026, subject to up to four (4) additional twelve (12) month extension options pursuant to the terms and conditions of the Option Agreement.

3. Conflict of Provisions. This Memorandum is prepared for the purpose of recordation and shall not alter or affect in any way the rights and obligations of Developer-Grantee and Owner-Grantor under the Option Agreement. In the event of any inconsistency between this Memorandum of Option and the Option Agreement, the terms of the Option Agreement shall control.

[signatures on following pages]

IN WITNESS WHEREOF, the parties have executed this Memorandum as of the date first set forth above.

OWNER-GRANTOR ACKNOWLEDGMENT

Ivy Hill L.L.C., c/o Ellen Lightman

By: Ellen Lightman
Name: Ellen Lightman
Title (if applicable): _____

STATE OF MARYLAND)
) ss.
County
~~CITY~~ OF BALTIMORE)

On the 3rd day of NOV, 2023 before the undersigned, personally appeared Ellen Lightman personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within Memorandum of Option Agreement, and acknowledged to me that they executed the same.

NOTARIAL SEAL
Sandra L. Guttenberg
NOTARY PUBLIC
BALTIMORE COUNTY
MARYLAND
MY COMMISSION EXPIRES March 23, 2025

Sandra L Guttenberg
Name: Sandra L Guttenberg
Notary – State MD
My Commission Expires: 3/23/25
Notary Registration No.: _____

Barbara L. Silverman

COMMONWEALTH OF VIRGINIA)
) ss.
CITY OF NEWPORT NEWS)

On the 6th day of november, 2023 before the undersigned, personally appeared Barbara L. Silverman personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within Memorandum of Option Agreement, and acknowledged to me that they executed the same.

NOTARIAL SEAL
SAMANTHA GRAHAM
NOTARY PUBLIC
COMMONWEALTH OF VIRGINIA
#201803
MY COMM. EXPIRES JUNE 30, 2024

Samantha Graham
Name: Samantha Graham
Notary – State - VA
My Commission Expires: 6/30/24
Notary Registration No.: 201803

IN WITNESS WHEREOF, the parties have executed this Memorandum as of the date first set forth above.

DEVELOPER-GRANTEE ACKNOWLEDGMENT

HEXAGON DEVELOPMENT, LLC,
a Delaware limited liability company

By: _____

Name: Drew Price

Title: Manager

COMMONWEALTH OF VIRGINIA)
) ss.
CITY OF CHARLOTTESVILLE)

On the 21st day of November, 2023 before the undersigned, personally appeared Drew Price personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within Memorandum of Option Agreement, and acknowledged to me that they executed the same.

NOTARIAL SEAL

_____
Name: Meghan E Byrnes
Notary – Commonwealth of Virginia
My Commission Expires: 10/31/25
Notary Registration No.: 7969123

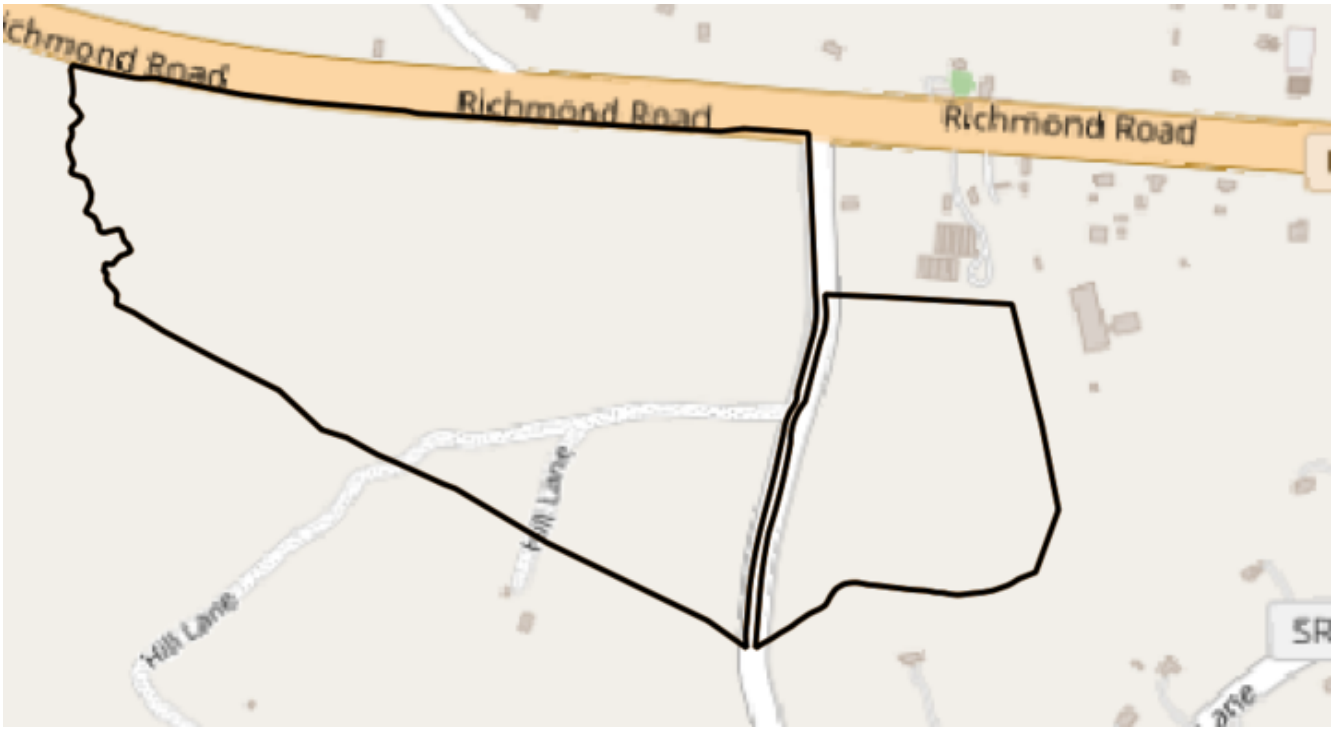
MEGHAN ELIZABETH BYRNES
NOTARY PUBLIC
REG. # 7969123
COMMISSION EXPIRES 10/31/2025
COMMONWEALTH OF VIRGINIA

Schedule "1"
to
Memorandum of Option Agreement

Legal Description

All of that certain real property in the County of James City, Commonwealth of Virginia , described as follows:

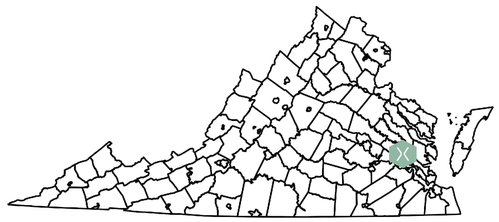
All of those certain real properties along in the County of James City, also referred to by Parcel ID 1110100013, 1110100024, consisting of approximately 100 acres, identified in orange below. To be revised with a metes and bounds survey to be completed by Developer.



APPENDIX B: CONCEPTUAL MASTER PLAN

Enclosed.

VIRGINIA VICINITY MAP



HEDERA SOLAR

3 MWac SOLAR PV SYSTEM
JAMES CITY COUNTY, VIRGINIA

JAMES CITY COUNTY VICINITY MAP



DRAWING SET CONTENTS	
DRAWING TITLE	DRAWING NUMBER
COVER SHEET	L1.0
MASTER PLAN	L1.1
SITE PLAN	L1.2
ADJACENT PARCELS	L1.3
EXISTING CONTOURS	L1.4
SOIL MAP	L1.5
HABITAT CORES	L1.6
IMPACTED AREA	L1.7

PROJECT OVERVIEW	
PARCEL ID	1110100013 & 1110100024
LANDOWNER	IVY HILL LLC & BARBARA SILVERMAN
ZONING	A1
PARCEL AREA	100 ACRES
SPECIAL USE PERMIT BOUNDARY	47.5 ACRES
CONCEPTUAL LIMITS OF DISTURBANCE	47.5 ACRES
CONCEPTUAL FENCED AREA	16.5 ACRES

DEVELOPMENT TEAM	
LEAD DEVELOPER	ESTER REKHELMAN (434.218.0595)

HEXAGON ENERGY

HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
Charlottesville, VA 22902
Phone: 434.227.5090
Website: www.hexagon-energy.com

Professional Engineer:

PE Seal:

DRAWING TYPE

- ☐ Preliminary
- ☐ Customer Approval
- ☒ Permitting
- ☐ Construction
- ☐ As-built
- ☐ Other

REVISIONS

Rev	By	Description	Date
0	EO	SITE MAP	12/18/2023
1	VC	PRELIMINARY SITE PLAN	5/8/2024
2	VC	INCORPORATE STORWATER MANAGEMENT	5/29/2024
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9	EO	ADD COVER SHEET & REVISE ENTRANCE	10/7/2024
10	EO	REVISE IMPACTED PRIME FARMLAND	10/9/2024
11	EO	ADD REVISED RPA & STORMWATER PONDS	11/6/2024

Project Name: HEDERA SOLAR, LLC 3MWac

Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: COVER SHEET

Scale:

Project ID: TBD

Sheet No: L1.0



LEGEND

- PARCEL BOUNDARY
- SETBACKS (50' FROM PROPERTY LINE, 100' FROM PUBLIC ROW)
- PROPOSED FENCE AREA
- PROPOSED SOLAR PANELS (SINGLE AXIS TRACKERS)
- PROPOSED PROJECT SWITCHGEAR AND MV TRANSFORMER
- PROPOSED INTERNAL ROAD
- BMP ACCESS ROADS
- PROPOSED ATTACHMENT LINE
- PROPOSED UTILITY POLES
- PROPOSED POI
- EXISTING DISTRIBUTION LINE
- UTILITY ROW (30')
- DELINEATED WETLANDS
- DELINEATED STREAMS
- RPA (100')
- VEGETATIVE BUFFER
- HABITAT CORE
- HABITAT CORRIDOR
- SOILS CLASSIFIED AS "ALL AREAS PRIME FARMLAND"
- EXISTING CONTOURS (3')
- STORMWATER FACILITY
- ADJACENT PARCEL BOUNDARIES

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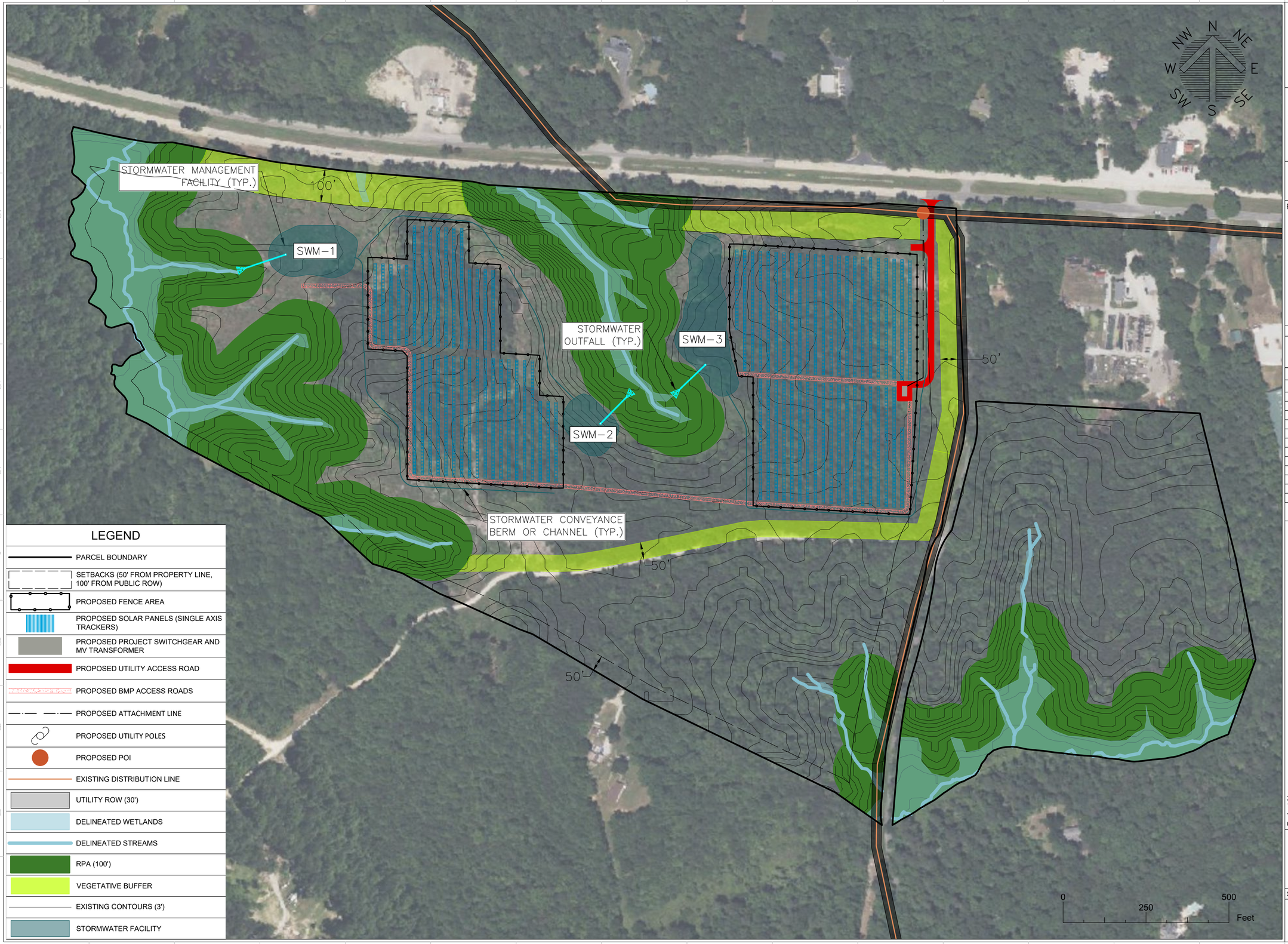
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Sheet Name: MASTER PLAN

Scale:

Project ID: TBD

Sheet No: L1.1



LEGEND

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- SETBACKS (50' FROM PROPERTY LINE, 100' FROM PUBLIC ROW)
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- PROPOSED SOLAR PANELS (SINGLE AXIS TRACKERS)
- PROPOSED PROJECT SWITCHGEAR AND MV TRANSFORMER
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- PROPOSED BMP ACCESS ROADS
- PROPOSED ATTACHMENT LINE
- PROPOSED UTILITY POLES
- PROPOSED POI
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- RPA (100')
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- EXISTING CONTOURS (3')
- STORMWATER FACILITY

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Project Name: HEDERA SOLAR, LLC 3MWac

Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: SITE PLAN

Scale:

Project ID: TBD

Sheet No: L1.2



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HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
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Project Name: HEDERA SOLAR, LLC 3MWac

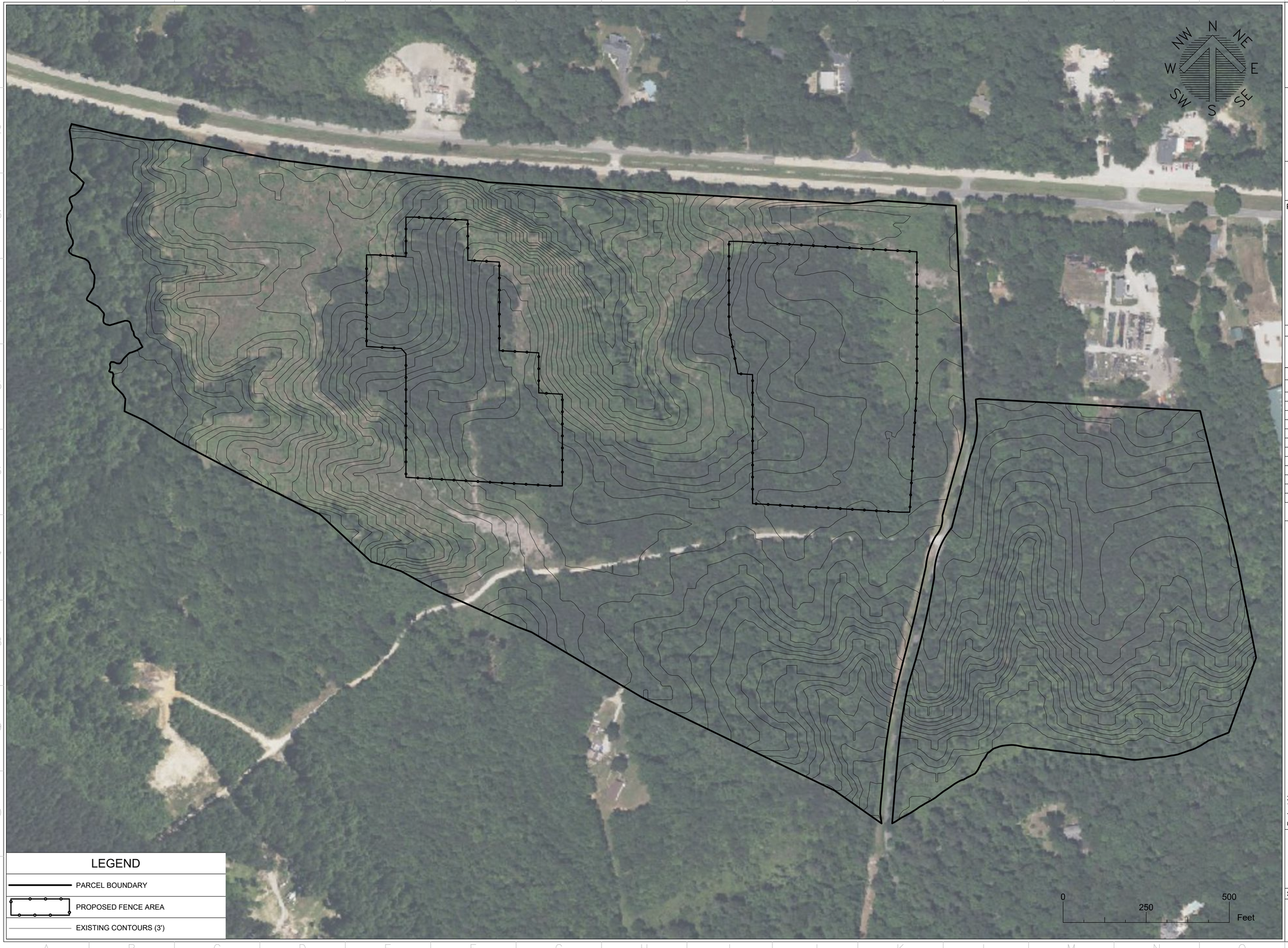
Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: ADJACENT PARCELS

Scale:

Project ID: TBD

Sheet No: L1.3



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Charlottesville, VA 22902
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Project Name:
HEDERA SOLAR, LLC
3MWac

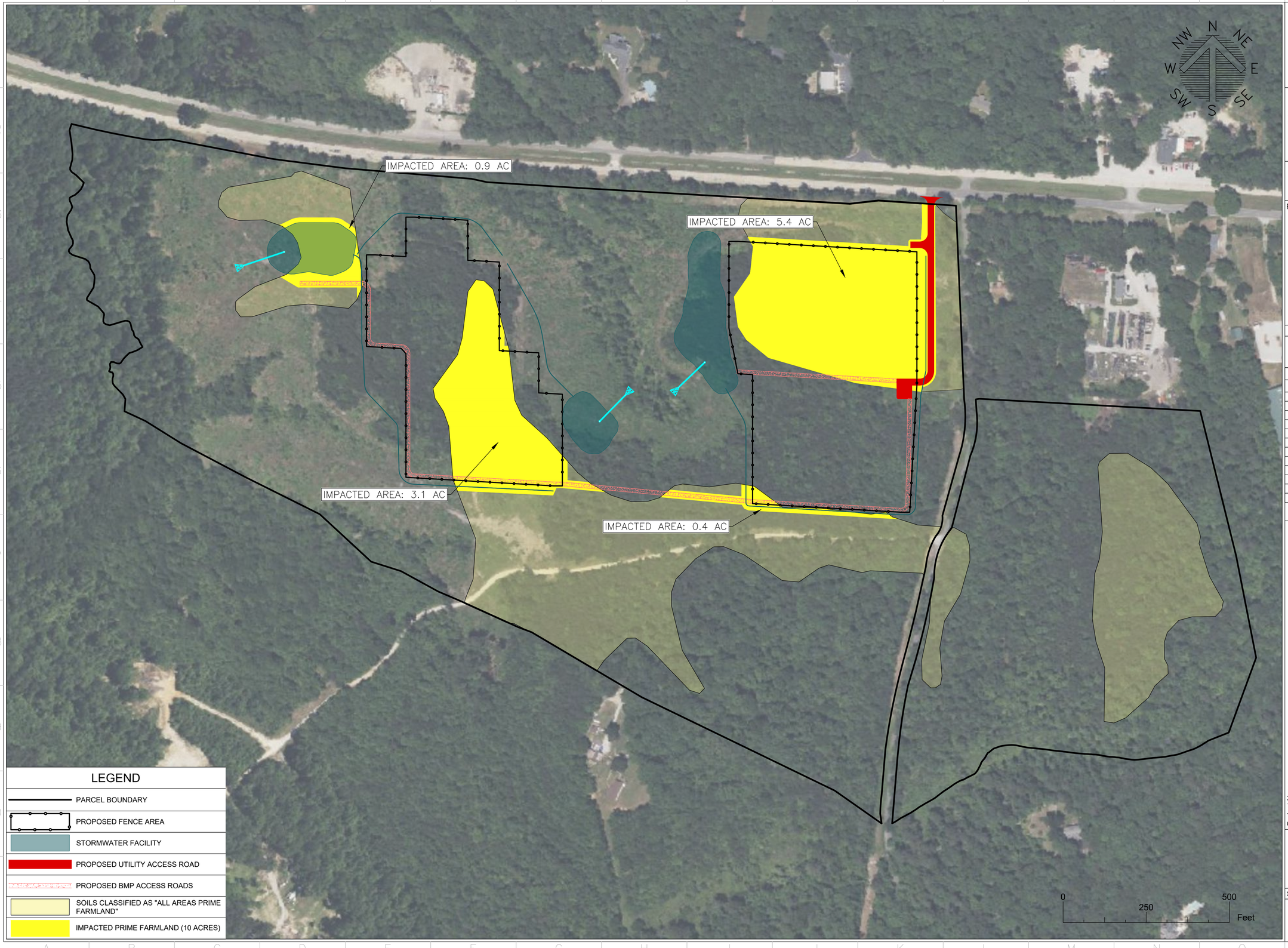
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IVY HILL RD
TOANO, VA 23168
37.402° N, -76.843° W

Sheet Name:
EXISTING CONTOURS

Scale:

Project ID: TBD

Sheet No:
L1.4



LEGEND

- PARCEL BOUNDARY
- PROPOSED FENCE AREA
- STORMWATER FACILITY
- PROPOSED UTILITY ACCESS ROAD
- PROPOSED BMP ACCESS ROADS
- SOILS CLASSIFIED AS "ALL AREAS PRIME FARMLAND"
- IMPACTED PRIME FARMLAND (10 ACRES)

HEXAGON ENERGY

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Professional Engineer:

PE Seal:

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Project Name: HEDERA SOLAR, LLC 3MWac

Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: PRIME FARMLAND

Scale:

Project ID: TBD

Sheet No: L1.5



HEXAGON ENERGY

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321 E. Main St, Suite 500
Charlottesville, VA 22902
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PE Seal:

DRAWING TYPE

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7	EO	PERMIT PLAN	7/8/2024
8	EO	ADD BMP ACCESS ROADS	9/19/2024
9	EO	ADD COVER SHEET & REVISE ENTRANCE	10/7/2024
10	EO	REVISE IMPACTED PRIME FARMLAND	10/9/2024
11	EO	ADD REVISED RPA & STORMWATER PONDS	11/6/2024

Project Name: HEDERA SOLAR, LLC 3MWac

Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: HABITAT CORES

Scale:

Project ID: TBD

Sheet No: L1.6

APPENDIX C: WETLAND DELINEATION REPORT

Enclosed.

Wetland and Other Surface Waters Delineation And Resource Protection Area Evaluation

Hedera Solar
James City County, Virginia
±100 Acres

May 17, 2024

Prepared For:

Hedera Solar, LLC

Prepared By:

Kimley»Horn

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Attachment C – Delineation Figures
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1. INTRODUCTION

Kimley-Horn and Associates, Inc. (Kimley-Horn) was retained by Hedera Solar, LLC (Client) to perform a wetland and other surface waters (i.e. streams, ditches, and open water features) delineation (Delineation) for the proposed Hedera Solar (Project) sited on ±100 acres (ac) located ±0.25 miles southwest of the intersection of Richmond Road (U.S. Route 60) and Ivy Hill Road in James City County, Virginia (Delineation Limits). Concurrent with the Delineation, Kimley-Horn conducted an evaluation to determine water bodies with perennial flow and identify Resource Protection Areas (RPAs).

The following report was prepared in general accordance with wetland delineation package submittal requirements per the USACE's Wetland Delineation Report Site Information Summary and VDEQ's State Surface Waters Delineation (SSWD).

2. PROJECT LOCATION

The Delineation Limits comprise ±100 ac located at 101 and 121 Ivy Hill Road in Toano, Virginia. The Delineation Limits consist of silvicultural areas and undeveloped forested area.

Table 2 Delineation Limits Information	
Delineation Limits - Acres:	±100 acres
Parcel(s) Address:	101 & 121 Ivy Hill Road, Toano, Virginia
Parcel(s) Id:	1110100013 & 1110100024
Nearby Road:	Richmond Road (U.S. Route 60)
Latitude/ Longitude - NAD 1983:	37.402313, -76.84274; 37.400682, -76.837533
Hydrologic Unit Code (HUC):	HUC 02080206 – Lower Chickahominy River
USGS Topographic Sheet:	Toano, VA 7.5 Minute Quadrangle
Nearest Waterbody:	Edwards Swamp, tributary to Mill Creek

3. APPLICANT, PROPERTY OWNER(S), AND AGENT INFORMATION

The contact information for the applicant, property owner(s), and agent is provided below.

Applicant:
Ester Rekhelman
Hedera Solar, LLC
321 East Main Street., Suite 500 Charlottesville, VA 22902
Erekhelman@hexagon-energy.com – 434.218.0595

Property Owner(s):
Ellen Lightman
5 Farringdon Court
Baltimore, MD 21209
443.629.4514

Agent:
Kimley-Horn and Associates
Attn: Brooke Runnion; Katie Crum
2035 Maywill Street, Suite 200
Richmond, Virginia 23230
brooke.runnion@kimley-horn.com; katie.crum@kimley-horn.com

4. METHODS

4.1. DELINEATION

Kimley-Horn conducted the Delineation to identify and delineate wetlands and other surface waters that may be jurisdictional to the USACE and/or VDEQ. The jurisdictional status of the identified features was not formally determined as part of the Delineation. Kimley-Horn conducted the Delineation in general accordance with the methodologies for identification of wetlands contained in the *U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual* (the 1987 Manual) and the *USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region, Version 2.0* (the Regional Supplement). The following additional data sources were used to inform the Delineation:

- USACE National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams, Interim Version, November 2022
- 2022 National Wetland Plant List (NWPL)
- Field Indicators of Hydric Soils in the United States, A Guide for Identifying and Delineating Hydric Soils, Version 8.2, 2018
- Natural Resource Conservation Service (NRCS) Local Hydric Soils List from Soil Data Access (SDA)
- Classification of Wetlands and Deepwater Habitats of the United States
- Virginia Department of Environmental Quality's (VDEQ) Virginia Water Protection (VWP) Permit and Compliance Manual
- VDEQ's Guidance Memorandum No. 08-2004 Regulation of Ditches under the VWPP Program
- VDEQ's Virginia State Waters Delineation Certification Program Overview & Requirements document dated October 03, 2023, updated April 10, 2024
- VDEQ's Wetland Condition Assessment Tool (WetCAT)
- USACE Navigable Waters of the United States list, dated March 5, 2010
- U.S. Geological Survey (USGS) StreamStats

The Delineation consisted of a desktop review of background data and materials and on-site investigations to identify wetlands and other surface water features (i.e. streams and open water features) located within the Delineation Limits.

Specifically, Kimley-Horn gathered and analyzed readily obtainable background materials to preliminarily identify locations and types of potential wetlands and other surface waters located within the Delineation Limits. The below listed mapping sources were used to assist in the Delineation and are presented as **Figures 1** through **7** within **Attachment A**.

- USGS topographic mapping
- VBMP Aerial images dated 2021
- Light Detection and Ranging (LiDAR) elevation data
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) mapping
- USGS National Hydrography Dataset (NHD)
- Federal Emergency Management Agency (FEMA) National Flood Hazard Layer (NFHL)
- NRCS soil mapping
- Virginia Acid Sulfate Soil Risk Map

As part of the desktop review, Kimley-Horn utilized the USACE's Antecedent Precipitation Tool (APT) to assess hydrologic conditions (i.e. precipitation normalcy), presence of drought conditions, and

approximate dates of the wet and dry seasons. Note that the APT uses publicly available data sources to determine if precipitation conditions from the previous three months are “wet,” “normal,” or “dry” compared to precipitation patterns from the most recent 30-year record and also reports the Palmer Drought Severity Index (PDSI) separately from the precipitation normalcy score. The APT report is provided in **Attachment B**.

Following the desktop review, Kimley-Horn representatives conducted on-site investigations on April 17 and 22, 2024 to identify wetlands and other surface water features (i.e. streams and open water systems) located within the Delineation Limits as detailed below. The on-site investigations were conducted by Lexi Winne, Brooke Runnion, Burke Haywood, Jake Sanne, and Andrew Bertka.

- Documented data regarding soils, vegetation, and hydrology at representative data locations (Data Points) and recorded the data utilizing the USACE Regional Supplement Data Forms (Data Forms) in the Ecobot application.
- Documented data regarding soils at soil point locations to augment the Data Points.
- Took representative photographs at data points and wetland/surface water areas.
- Documented stream characteristics and recorded the data utilizing VDEQ’s Stream Identification Field Data Form.
- Delineated and flagged the outer boundary of identified wetlands and other surface waters located within the Delineation Limits. Flags were numbered and located utilizing a Trimble R1 GPS unit or equivalent. Only one bank of the stream was flagged and the width approximated for streams with a width of 6 feet or less or where GPS service was limited. Where streams were located within a wetland system the NHD, LiDAR and/or aerial photography was utilized to approximate stream locations and augment the field delineation.
- Identified the Cowardin classification for delineated features.

Kimley-Horn then verified the data for accuracy and completeness in ArcGIS and generated wetland delineation mapping which is provided in **Attachment C** (**Figures 1** through **7**). A Surface Waters Summary Table is provided in **Attachment D**. Completed USACE Data Forms are provided in **Attachment E**. A photolog from the site visits is provided in **Attachment F**. Completed VDEQ’s Stream Identification Field Data Forms are provided in **Attachment G**.

4.2. RPA EVALUATION

VDEQ requires a determination of whether state waters are also considered RPAs for delineations that are conducted in Chesapeake Bay Preservation Act (Bay Act) localities. RPAs consist of tidal wetlands; non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow; tidal shores; and a 100-foot-wide vegetated buffer adjacent to, and landward of, these features. Under the Bay Act, a water body with perennial flow is defined as “a body of water that flows in a natural or man-made channel year-round during a year of normal precipitation. This includes, but is not limited to streams, estuaries, and tidal embayments and may include drainage ditches or channels constructed in wetlands or from former natural drainage ways, which convey perennial flow. Lakes and ponds, with perennial streams flowing into, out of, or through them, are a part of the perennial stream. Generally, the water table is located above the streambed for most of the year and groundwater is the primary source for stream flow.”

The Project is located within a Bay Act locality. Therefore, concurrent with the on-site investigations for the Delineation, Kimley-Horn evaluated whether a water body has perennial flow under the Bay Act in general accordance with the methods contained in the *James City County’s Perennial Stream Protocol Guidance Manual* (James City County Method). Kimley-Horn utilized the form provided in the James City County Method to document the geomorphic, hydrologic, and biological indicators for stream reaches

(**Attachment H**). Representative photographs are provided in **Attachment F**. In addition, Kimley-Horn utilized the following guidance to identify RPA features:

- VDEQ's Determinations of Water Bodies with Perennial Flow, Guidance on the Chesapeake Bay Preservation Area Designation and Management Regulations, dated February 2022
- VDEQ's Resource Protection Areas: Nontidal Wetlands, Guidance on the Chesapeake Bay Preservation Area Designation and Management Regulations, dated February 2022

Mapping depicting the RPA features identified in the Delineation Limits is provided in **Attachment I** (**Figure 1)**.

5. RESULTS

5.1. DESKTOP REVIEW

The following provides a summary of the background information reviewed.

5.1.1. Surface Water Flow and Topography

The Delineation Limits are predominately depicted as cleared and uncleared forested area in the USGS topographic mapping and aerial photographs. Edwards Swamp appears to extend into the eastern portion of the Delineation Limits and a small unnamed tributary of Mill Creek is located along the southeastern boundary of the Delineation Limits. The USGS topographic map depicts the Delineation Limits as generally varying in elevations ranging from approximately 30 to 100 feet above mean sea level. The areas of lower elevation are generally associated with the above noted swamp and stream system. The LiDAR data is consistent with the topographic mapping. The referenced mapping is provided as **Figures 1** through **4** in **Attachment A**.

5.1.2. NWI and NHD Mapping

NWI depicts ±0.38 acres of riverine, ±12.76 acres of freshwater forested wetlands (PFO), and ±17.56 acres of freshwater scrub/ shrub wetlands (PSS) located within the Delineation Limits. NHD depicts an unnamed tributary along the southeastern boundary of the Delineation Limits. Additionally, NHD shows a confluence of two unnamed tributaries of Edwards Swamp on the western portion of the Delineation Limits. NWI and NHD data is depicted on **Figure 5** within **Attachment A.**

5.1.3.FEMA Floodplain Mapping

The FEMA NFHL for flood map number 51095C0038D and 51095C0039D, both effective on 12/16/2015, depicts the entirety of the Delineation Limits as unshaded Zone X (areas of minimal flood hazard).

5.1.4. Soils and Geology

NRCS Soil Survey data for James City County identified seven (7) soil types within the Delineation Limits (**Table 5.1.4**). Of the mapped soil units, Johnston Complex (Map Unit Symbol 17) is classified as a hydric soil. The soil data is depicted on **Figure 6** within **Attachment A**.

Table 5.1.4 Summary of Soils Identified within the Delineation Limits

Symbol	Map Unit Name
11C	Craven-Uchee complex, 6 to 10 percent slopes
15E	Emporia complex, 15 to 25 percent slopes
17	Johnston Complex
19B	Kempsville-Emporia fine sandy loams, 2 to 6 percent slopes
29A	Slagle fine sandy loam, 0 to 2 percent slopes
29B	Slagle fine sandy loam, 2 to 6 percent slopes
34B	Uchee loamy fine sand, 2 to 6 percent slopes

The Project is mapped as underlain by the Chesapeake group of the Bacons Castle Formation. According to the Virginia Acid Sulfate Soil Risk Map, prepared by the School of Plant and Environmental Sciences (SPES) at Virginia Polytechnic Institute and State University (Virginia Tech), the Chesapeake Group has a moderate-high risk (Risk Code 3) of encountering acid sulfate soil conditions and the risk description is "High sulfide concentrations, occurring commonly in noted Coastal Plain sediments and sporadically in Valley and Ridge black shales, are likely to produce severely problematic acid sulfate soil conditions, requiring intense reclamation efforts."

5.1.5. Precipitation Data

The USACE's APT indicated "Normal" antecedent precipitation conditions compared to normal precipitation conditions that occurred during the preceding 30 years. In addition, the Drought Index is "Mild wetness" and the field effort for the delineation was conducted during the "wet season." The APT report is provided in **Attachment B**.

5.1.6. WetCAT

VDEQ's WetCAT (accessed May 07, 2024) did not depict previously issued VWP or USACE permits for the Delineation Limits. In addition, WetCAT did not depict impaired waters within the Delineation Limits.

5.2. WETLANDS AND OTHER SURFACE WATERS DELINEATION

In Kimley-Horn's opinion, wetlands and other surface waters are present within the Delineation Limits as summarized below.

5.2.1. Delineation Plan

Delineation mapping is provided on **Figures 1** through **1.2** in **Attachment C**.

5.2.2. Identified Wetlands and Surface Waters

Site observations were generally consistent with the background material reviewed. The Delineation identified the following:

- Wetlands – A total of ±9.25 acres of non-tidal wetlands consisting of ±9.18 acres are palustrine forested (PFO) wetlands, ±0.05 acres of palustrine scrub-shrub (PSS) wetlands, and ±0.02 acres of palustrine emergent (PEM) wetlands. Wetlands A, B, C, D, E, and G have surface water connections via perennial and intermittent streams that flow within the Delineation Limits and offsite to Mill Creek. Wetlands F and F.1 have surface water connections via intermittent streams with a culvert under Richmond Road (U.S. Route 60) flowing north into Edwards Swamp.
- Streams – A total of ±6,640 linear feet of stream channel with bed and bank and the presence of an ordinary high-water mark.
- Other Waters – No other surface waters were observed.
- Notes – normal circumstances were present during the Delineation field efforts.

A Surface Waters Summary Table is provided in **Attachment D**.

5.2.3. Non-Jurisdictional Features

It is anticipated that all features identified within the Delineation Limits are jurisdictional to the USACE and VDEQ.

5.2.4.USGS StreamStats

Based on a review of USGS StreamStats, the contributing drainage areas to the streams identified within the Delineation Limits do not exceed five square miles; therefore, the streams identified in the Delineation are not anticipated to be jurisdictional to the VMRC.

5.2.5. Navigable Waters

Mill Creek is a tributary of the Diascund Creek, which is a tributary of the Chickahominy River, which is ultimately a tributary of the James River. According to the USACE Navigable WOTUS List, the James

River was assumed to be a navigable water along its entire length. Mill Creek, Diascund Creek, and the Chickahominy River are not identified in the list.

5.3. RESOURCE PROTECTION AREAS

RPAs consist of tidal wetlands, tidal shores, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow, and a buffer not less than 100 feet in width located adjacent to and landward of the listed RPA components, and along both sides of any water body with perennial flow. Based on the Delineation and perenniality determination, Kimley-Horn identified the following:

- Stream systems A-1 and E as water bodies with perennial flow and therefore an RPA.
- Wetlands A, A.1, A.2, A.3, A.4, and E as non-tidal wetlands connected by surface flow and contiguous to water bodies with perennial flow and therefore an RPA.
- Stream system E.1-1 is intermittent, but this stream and associated wetlands E.1 are assumed to be RPAs based on a review of James City County GIS data and aerial photography. Kimley-Horn assumes this stream is perennial downstream of the Delineation Limits and the onsite wetlands would be considered as non-tidal wetlands connected by surface flow and contiguous to this perennial stream.
- The remaining stream systems are intermittent or ephemeral. If the system did not have adjacent wetlands that are connected and contiguous to a perennial stream, the system was not considered an RPA.

Figures 1 through **1.3** within **Attachment I** depict the RPAs.

6. LIMITATIONS

Kimley-Horn was retained to perform a Delineation and RPA Evaluation and we performed only those tasks specifically stated in the scope of services. This report may be relied upon only by Kimley-Horn's Client and is not intended for use by any other party. The Client may use this report as part of its due diligence and to initiate confirmation of the Delineation with the USACE and/or VDEQ, but this report should not be used as the sole basis for the Client's decision making.

The Delineation and RPA Evaluation are based on a review of publicly available data sources and on-site investigations conducted by Kimley-Horn's professional staff as of completion of our on-site investigations. On-site investigations entailed observations regarding indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to assess the potential for wetlands. Site conditions and field indicators can vary with time and our findings may differ from future observation by others.

The boundaries of wetlands and other surface waters is based on Global Positioning System (GPS) collected field data. In addition, the Delineation Limits are based on Geographic Information Systems (GIS) data and may vary from the actual Project and/or parcel limits.

The boundaries of potential wetlands and other surface waters must be confirmed by the USACE and/or VDEQ. In addition, RPA determination must be verified by the locality and/or VDEQ. This report does not constitute a jurisdictional determination, wetland confirmation, or RPA determination. Delineated boundaries presented in this report may differ from the final agency-confirmed boundaries. In addition, new issues and requirements may arise during confirmation of the Delineation, RPA Evaluation, and development process because of changes in governmental rules and policy, changed circumstances, altered site conditions, weather, or unforeseen conditions.

7. REFERENCES

Code of Virginia, Title 62.1 Waters of the State, Ports and Harbors, Chapter 3.1 State Water Control Law, § 62.1-44.3.

David, G., K. Fritz, Tracie-Lynn Nadeau, B. Topping, A. Allen, P. Trier, S. Kichefski, L. James, E. Wohl, AND D. Hamill. (2022). National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams. US Army Corps of Engineers, Washington, DC. https://www.erdc.usace.army.mil/Media/Fact-Sheets/Fact-Sheet-Article-View/Article/486085/ordinary-high-water-mark-ohwm-research-development-and-training/

Environmental Laboratory. (1987). "Corps of Engineers Wetlands Delineation Manual." Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Environmental Systems Research Institute, Inc. (2019). USA Topo Maps [Basemap]. https://www.arcgis.com/home/item.html?id=99cd5fbd98934028802b4f797c4b1732

Fairfax County Stormwater Planning Division. (2003). Perennial Stream Field Identification Protocol. https://www.fairfaxcounty.gov/publicworks/sites/publicworks/files/Assets/Documents/PDF/03_ps_protocol_ada.pdf

Federal Emergency Management Agency. (2015) "National Flood Hazard Layer", Flood Insurance Rate Map Number 51095C0038D, 51095C0039D, Effective: August 03, 2015. https://www.fema.gov/flood-maps/national-flood-hazard-layer

Federal Geographic Data Committee. (2013). Classification of wetlands and deepwater habitats of the United States. FGDC-STD-004-2013. Second Edition. Wetlands Subcommittee, Federal Geographic Data Committee and U.S. Fish and Wildlife Service, Washington, DC. https://www.fws.gov/sites/default/files/documents/Classification-of-Wetlands-and-Deepwater-Habitats-of-the-United-States-2013.pdf

James City County. (2010). James City County Perennial Stream Protocol Guidance Manual. https://www.jamescitycountyva.gov/DocumentCenter/View/2158/JCC-Perennial-Stream-Protocol-Manual-PDF

Natural Resource Conservation Service. (2024). Local Hydric Soils List from Soil Data Access. https://www.nrcs.usda.gov/publications/query-by-ssa.html

Revised Definition of ''Waters of the United States'' Final Rule, 88 Federal Register 3004. (January 18, 2023). (33 CFR Part 328 and 40 CFR Part 120). https://www.federalregister.gov/documents/2023/01/18/2022-28595/revised-definition-of-waters-of-the-united-states

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. (2024). Web Soil Survey. https://websoilsurvey.nrcs.usda.gov/app/

U.S. Army Corps of Engineers. (2010). Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0), ed. J. S. Wakeley, R. W. Lichvar, and C. V. Noble. ERDC/EL TR-10-20. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

U.S. Army Corps of Engineers. (2010). USACE list of Navigable Waters of the US. https://www.nao.usace.army.mil/Missions/Regulatory/Guidance-Documents/

U.S. Army Corps of Engineers. (2023). 2022 National Wetland Plant List, version 3.6. U.S. Army Engineer Research and Development Center, Vicksburg, MS. https://nwpl.sec.usace.army.mil/

U.S. Army Corps of Engineers. 2023. USACE Antecedent Precipitation Tool.

U.S. Department of Agriculture, Natural Resources Conservation Service. (2018). Field Indicators of Hydric Soils in the United States, Version 8.2. L.M. Vasilas, G.W. Hurt, and J.F. Berkowitz (eds.). USDA, NRCS, in cooperation with the National Technical Committee for Hydric Soils.

U.S. Fish and Wildlife Service. (2024). The National Wetlands Inventory data. [Dataset]. https://www.fws.gov/program/national-wetlands-inventory

U.S. Geological Survey. (2024). National Hydrography Dataset Virginia Hydrography Lines. [Dataset]. http://gisdata.virginia.gov/downloads/

U.S. Geological Survey. (2024). StreamStats. [Dataset]. https://streamstats.usgs.gov/ss/

Virginia Base Mapping Program. (2021). True color orthoimagery. Virginia Geographic Information Network. https://gismaps.vdem.virginia.gov/arcgis/rest/

Virginia Department of Energy. (2024). Reconnaissance Mapping of Karst-related Sinkholes in Virginia. https://energy.virginia.gov/geology/Sinkholes.shtml

Virginia Department of Environmental Quality. (2008). Guidance Memorandum No. 08-2004 Regulation of Ditches under the Virginia Water Protection Permit Program. https://townhall.virginia.gov/L/GetFile.cfm?File=GuidanceDocs%5C440%5CGDoc_DEQ_3673_v1.pdf

Virginia Department of Environmental Quality. (2019a). Guidance Memorandum No. 19-2003 Virginia Water Protection Permit and Compliance Manual. https://townhall.virginia.gov/l/GetFile.cfm?File=C:%5CTownHall%5Cdocroot%5CGuidanceDocs%5C440%5CGDoc_DEQ_6770_v1.pdf

Virginia Department of Environmental Quality. (2022). Determinations of Water Bodies with Perennial Flow, Guidance on the Chesapeake Bay Preservation Area Designation and Management Regulations. https://www.deq.virginia.gov/home/showpublisheddocument/22574/638430806260130000

Virginia Department of Environmental Quality. (2022). Resource Protection Areas: Nontidal Wetlands, Guidance on the Chesapeake Bay Preservation Area Designation and Management Regulations. https://www.deq.virginia.gov/home/showpublisheddocument/22569/638430806129970000

Virginia Department of Environmental Quality. (2024). Virginia State Waters Delineation Certification Program Overview & Requirements document. https://www.deq.virginia.gov/permits/water/wetlands-streams-vwp/

Virginia Department of Environmental Quality. (2024). Virginia Water Protection (VWP) Permit and Compliance Manual. https://www.deq.virginia.gov/permits/water/wetlands-streams-vwp

Virginia Department of Environmental Quality. (2024). Wetland Condition Assessment Tool (WetCAT).https://cmap22.vims.edu/WetCAT/

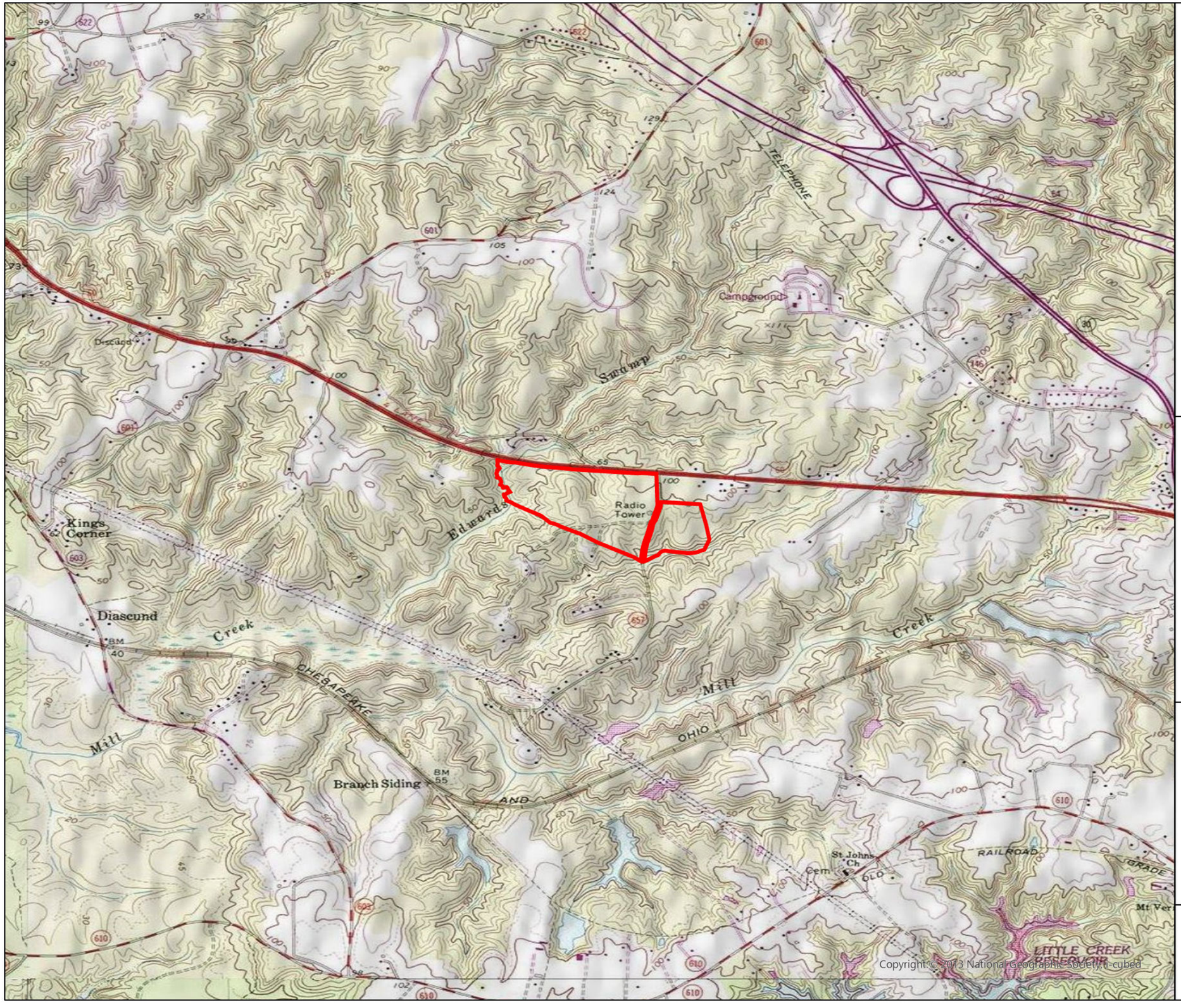
Virginia Geographic Information Network. (2018). Virginia LiDAR Inventory Web Mapping Application. https://vgin.maps.arcgis.com/home/item.html?id=1e964be36b454a12a69a3ad0bc1473ce

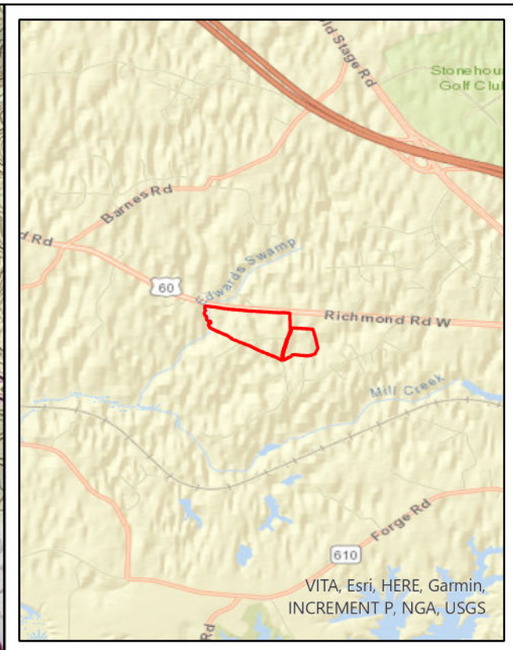
Virginia Tech. (2024). Virginia Acid Sulfate Soil Risk Map. https://landrehab.org/home/programs/acid-sulfate-soils-management/

Witt, A.C., Heller, M.J., Occhi, M.E., Spears, D.B., Lang, K.E., Berquist, C.R. Jr., and Prince, P.S., editors. (2021). Statewide Geologic Map Database of Virginia: Virginia Department of Energy, Geology and Mineral Resources Program, Open-file Report 2021-12, 1:250,000-scale map. https://energy.virginia.gov/geology/Sinkholes.shtml

Attachment A

Background Figures





DELINEATION LIMITS

NOTES:
1. USGS TOANO, VA PHOTO REVISED 1986
7.5 MIN QUADRANGLE

0 2,000 4,000 FT

1 IN =2,000 FT

HEDERA SOLAR
JAMES CITY COUNTY, VA

TOPOGRAPHIC VICINITY

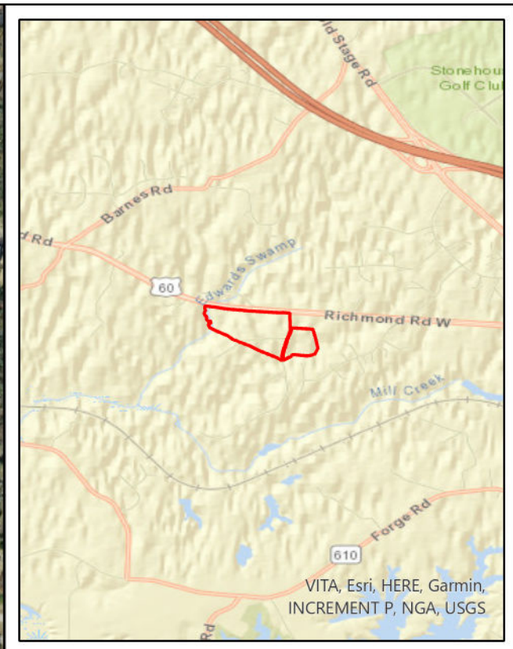
Kimley»Horn

N

DATE:
05/17/2024

FIGURE:
1





DELINEATION LIMITS

NOTES:
1. 2021 VBMP AERIAL IMAGERY

0 500 1,000 FT

1 IN =500 FT

HEDERA SOLAR
JAMES CITY COUNTY, VA

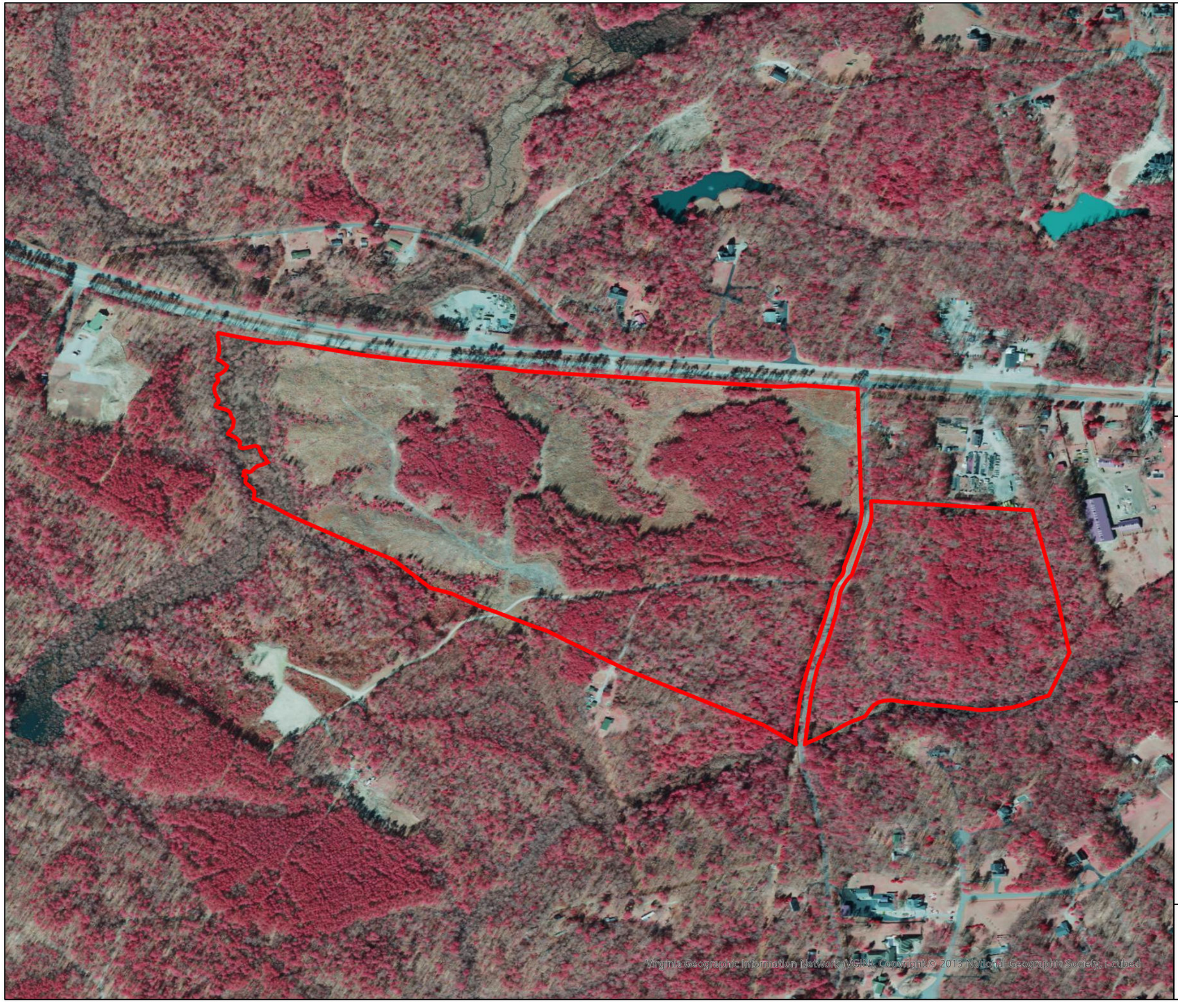
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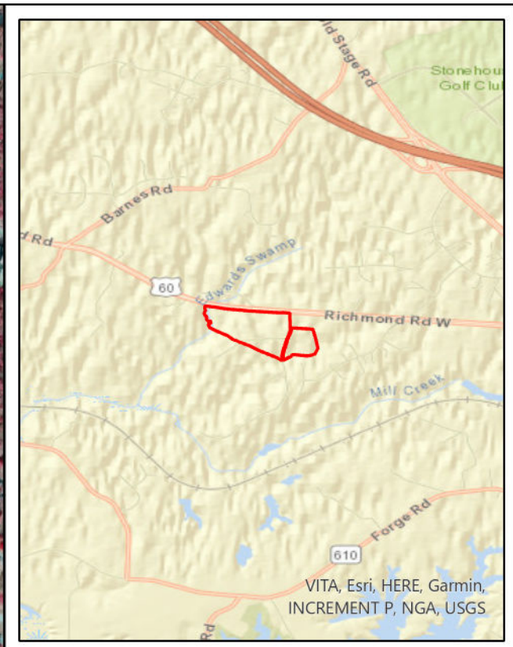
Kimley»Horn

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DATE:
05/17/2024

FIGURE:
2





DELINEATION LIMITS

NOTES:
1. 2021 VBMP INFRARED IMAGERY

0 500 1,000 FT

1 IN =500 FT

HEDERA SOLAR
JAMES CITY COUNTY, VA

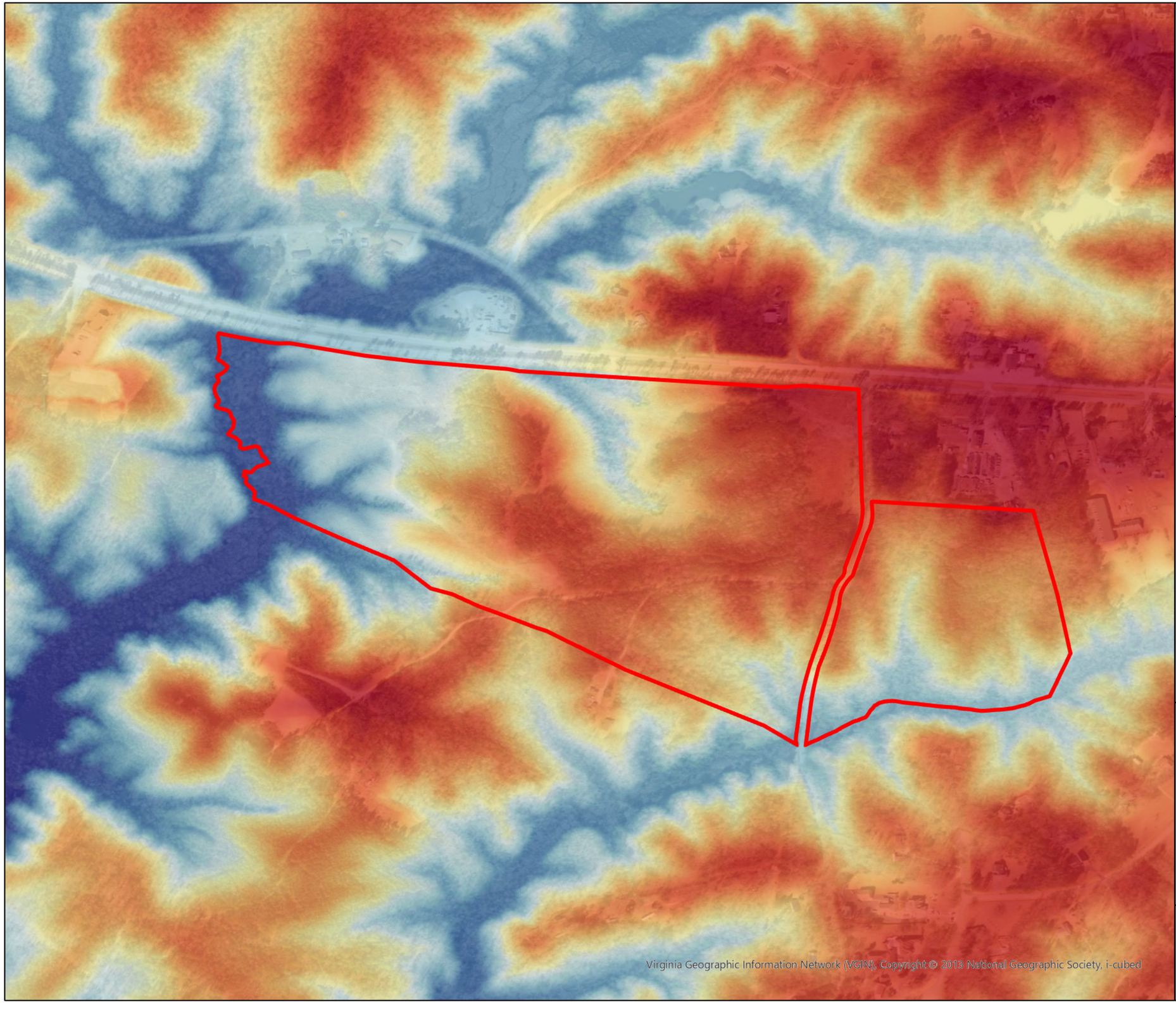
INFRARED IMAGERY

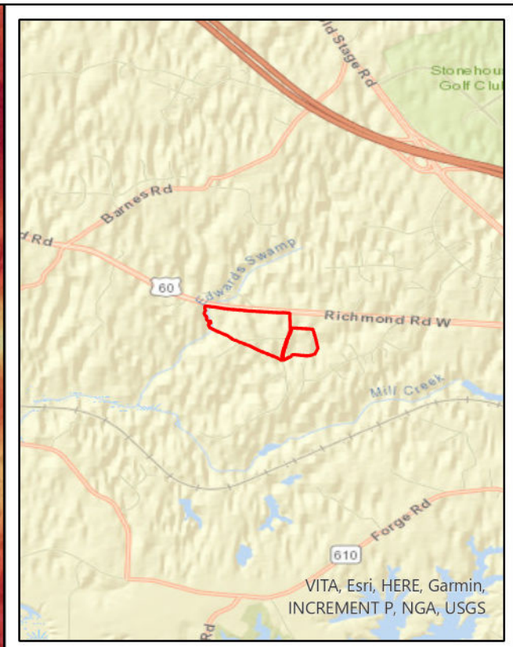
Kimley»Horn

N

DATE:
05/17/2024

FIGURE:
3





DELINEATION LIMITS

VALUE (FEET)

155.776

-2.2

NOTES:
1. 2021 VBMP AERIAL IMAGERY
2. USGS LIDAR DATA

0 500 1,000 FT

1 IN =500 FT

HEDERA SOLAR
JAMES CITY COUNTY, VA

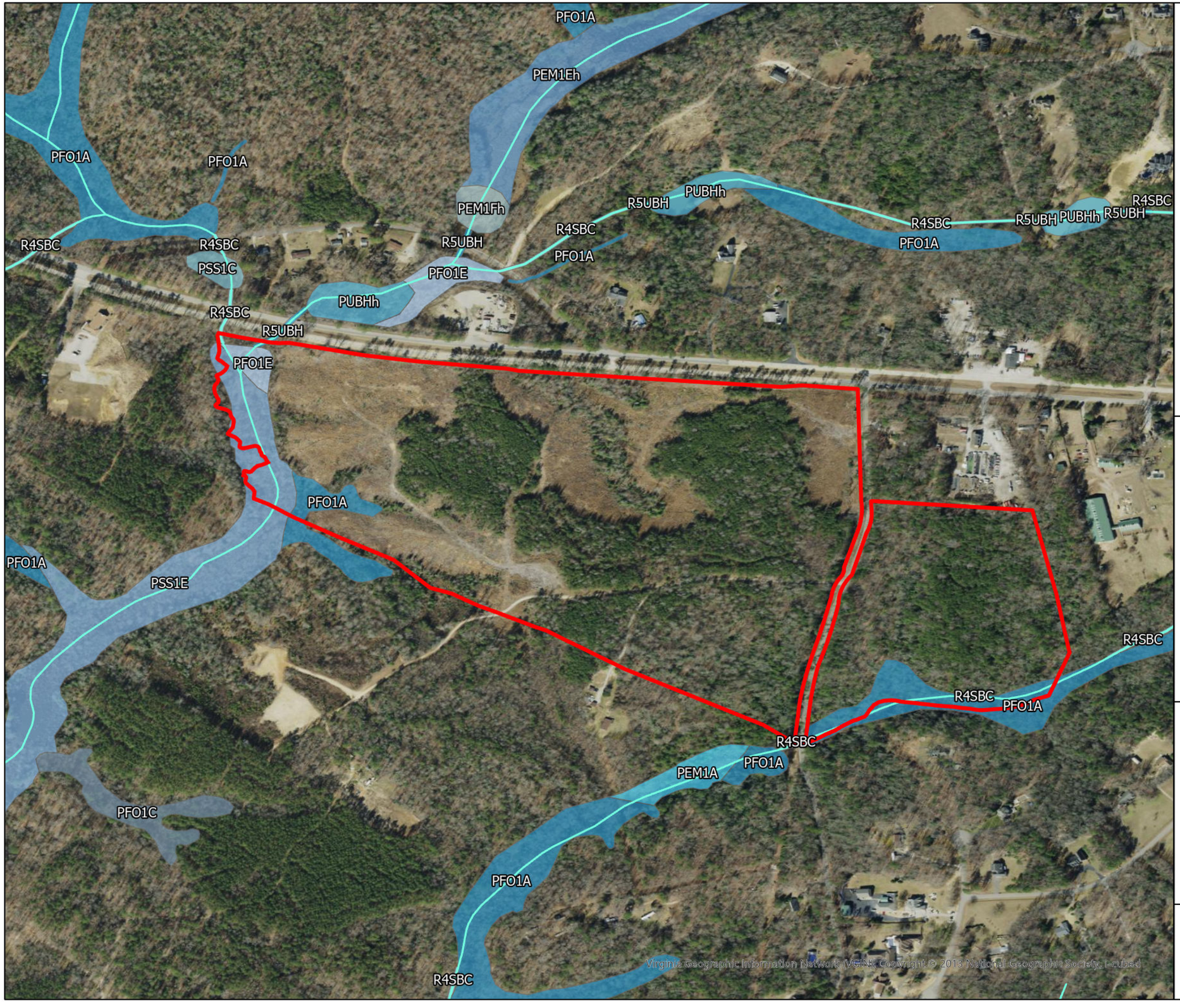
LIDAR DATA

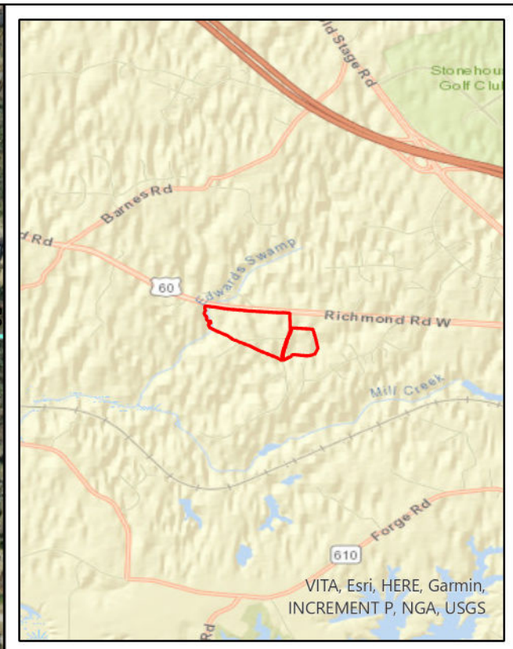
Kimley»Horn

N

DATE:
05/17/2024

FIGURE:
4





DELINEATION LIMITS
NHD FLOWLINE
PEM1A
PEM1EH
PEM1FH
PFO1A
PFO1C
PFO1E
PSS1C
PSS1E
PUBHH
R4SBC
R5UBH

NOTES:
1. 2021 VBMP AERIAL IMAGERY
2. USGS NATIONAL HYDROGRAPHY DATASET (NHD)
3. USFWS NATIONAL WETLANDS INVENTORY DATA (NWI)

0 500 1,000 FT

1 IN =500 FT

HEDERA SOLAR
JAMES CITY COUNTY, VA

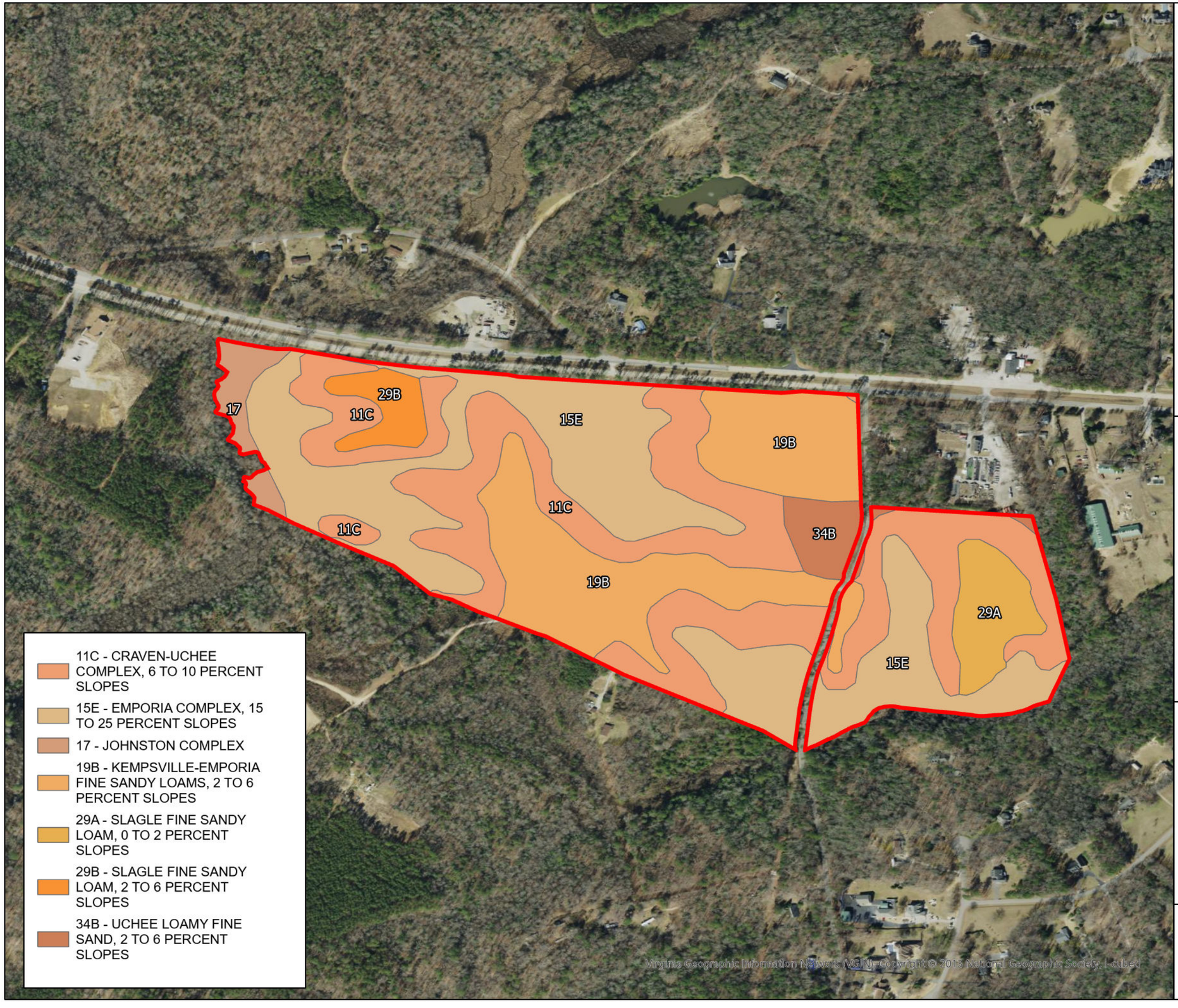
NATIONAL HDYROGRAPHY DATASET & NATIONAL WETLANDS INVENTORY

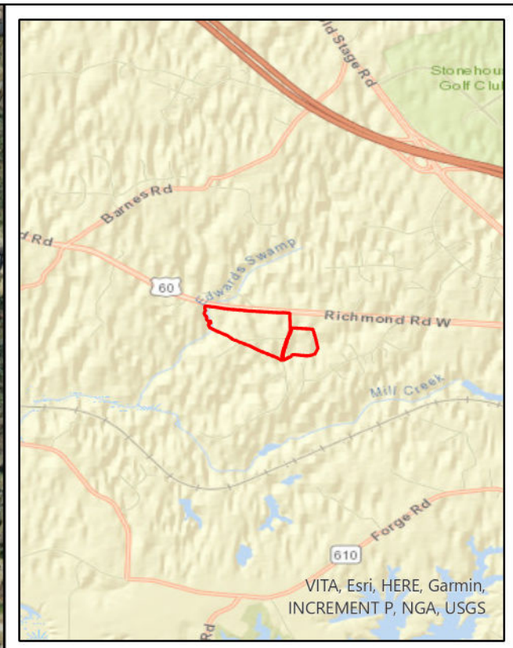
Kimley»Horn

N

DATE: 05/17/2024

FIGURE: 5





DELINEATION LIMITS

NOTES:
1. 2021 VBMP AERIAL IMAGERY
2. NRCS SOIL SURVEY DATA

0 500 1,000 FT

1 IN =500 FT

HEDERA SOLAR
JAMES CITY COUNTY, VA

NRCS SOIL DATA

Kimley»Horn

N

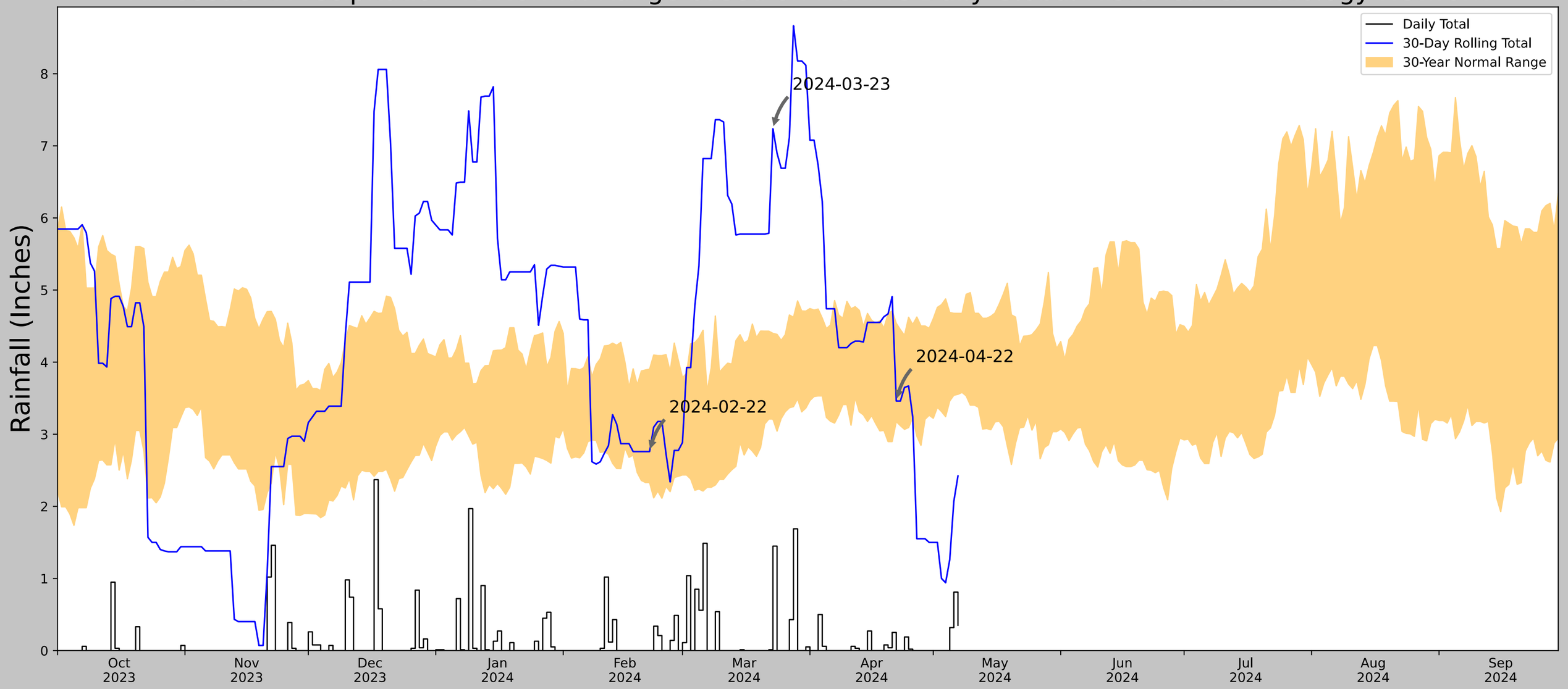
DATE:
05/17/2024

FIGURE:
6

Attachment B

Antecedent Precipitation Tool

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.402313, -76.837533
Observation Date	2024-04-22
Elevation (ft)	96.675
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-22	3.175591	4.538977	3.46063	Normal	2	3	6
2024-03-23	3.211024	4.399213	7.236221	Wet	3	2	6
2024-02-22	2.331102	3.902756	2.759843	Normal	2	1	2
Result							Normal Conditions - 14

US Army Corps of Engineers

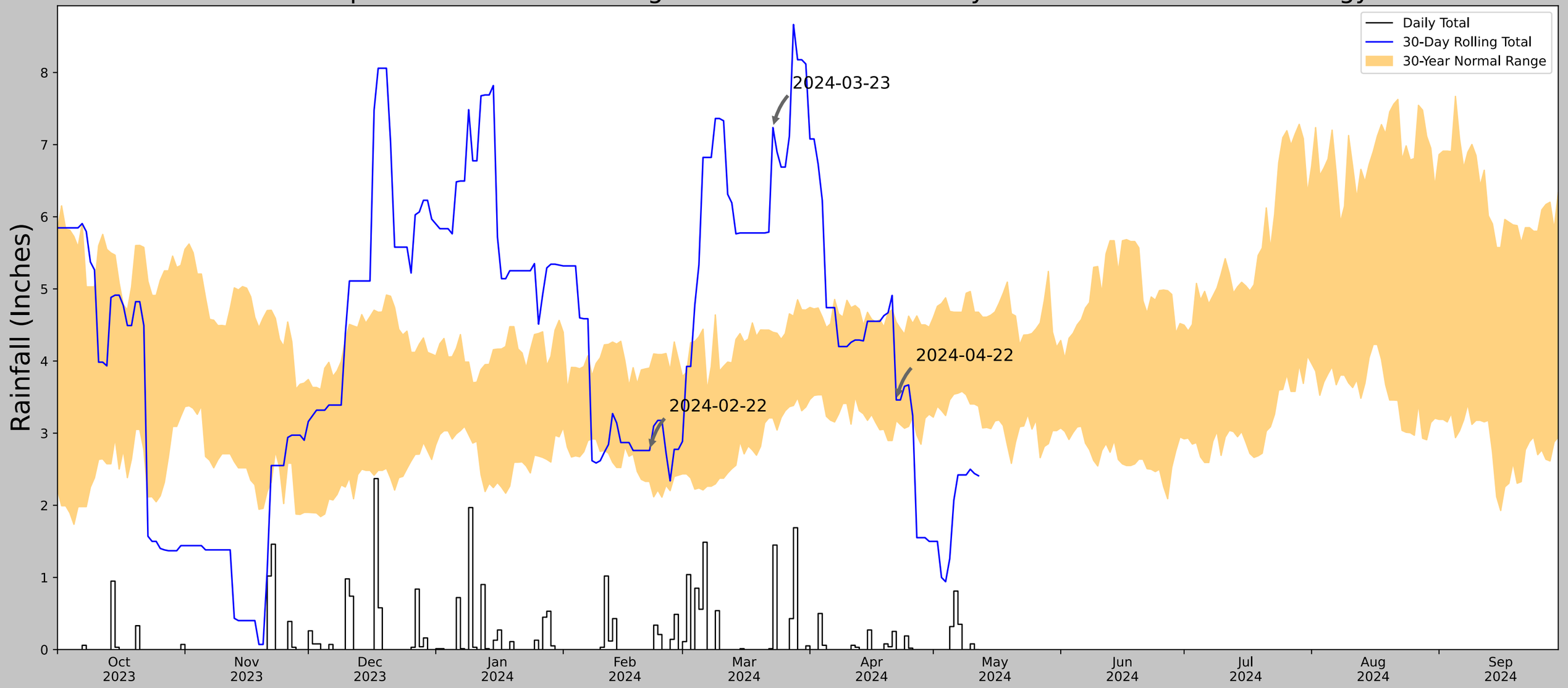
ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
WILLIAMSBURG 2 N	37.3017, -76.7039	69.882	10.109	26.793	4.82	11347	89
WILLIAMSBURG 1.4 ENE	37.278, -76.6839	73.163	1.972	3.281	0.894	0	1
WILLIAMSBURG 3.2 W	37.2745, -76.7641	125.0	3.806	55.118	1.922	1	0
NEWPORT NEWS INTL AP	37.1322, -76.4939	36.089	16.452	33.793	7.959	3	0
W PT 2 NW	37.5656, -76.8	20.013	18.981	49.869	9.488	1	0

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	37.400682, -76.837533
Observation Date	2024-04-22
Elevation (ft)	80.532
Drought Index (PDSI)	Mild wetness
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-04-22	3.175591	4.538977	3.46063	Normal	2	3	6
2024-03-23	3.211024	4.399213	7.236221	Wet	3	2	6
2024-02-22	2.331102	3.902756	2.759843	Normal	2	1	2
Result							Normal Conditions - 14

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

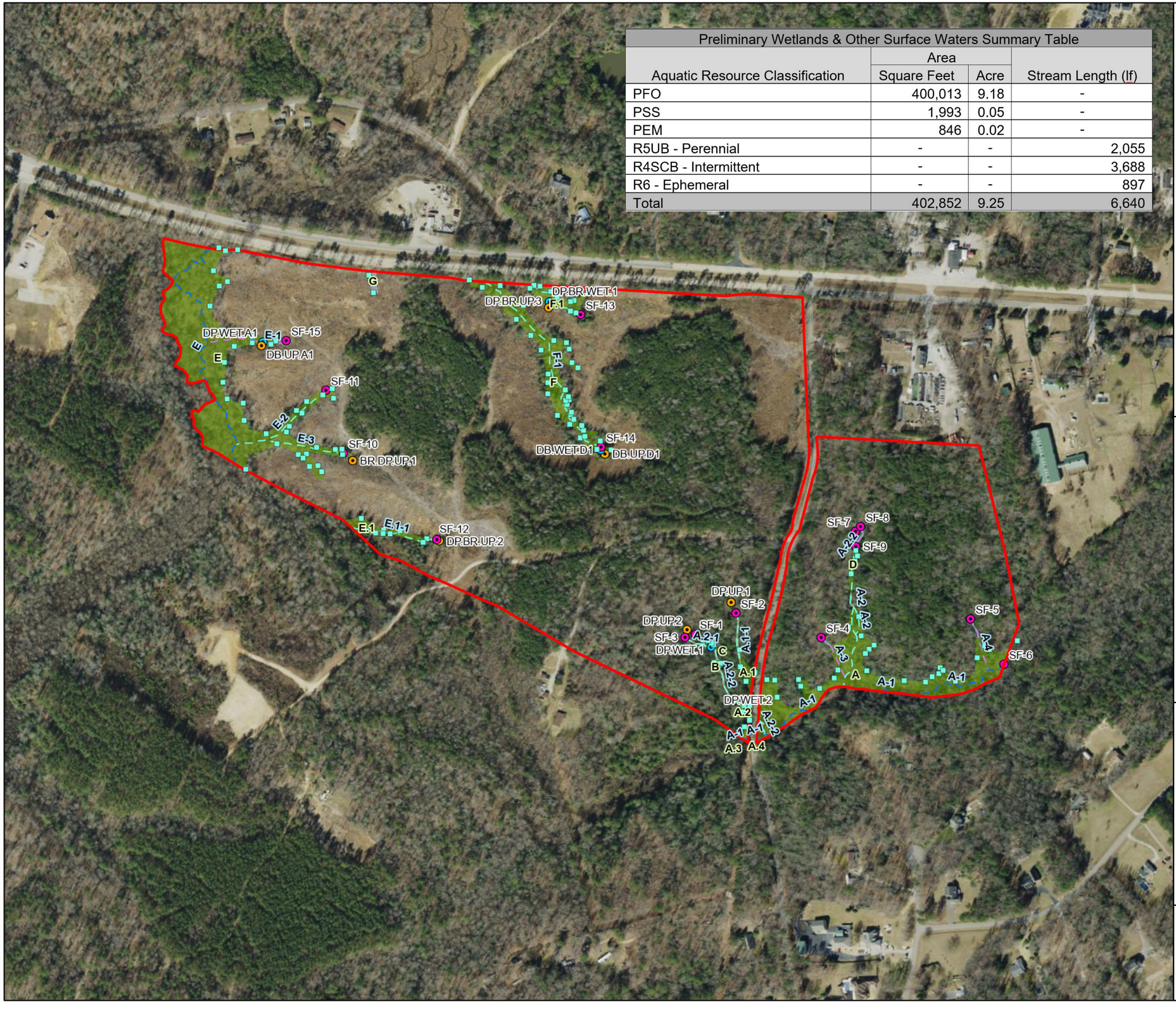
Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

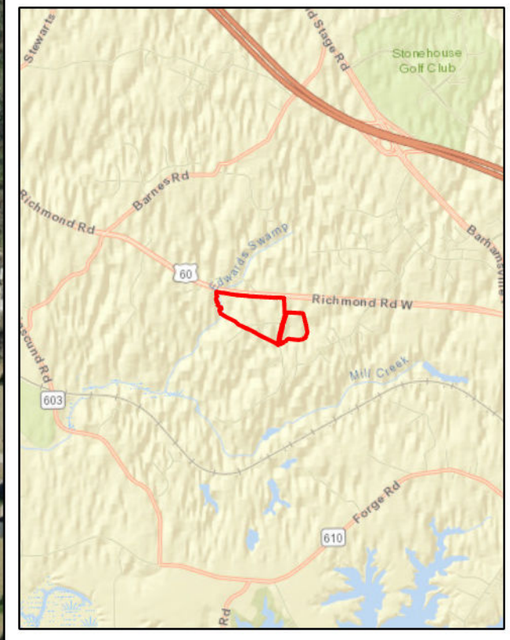
Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
WILLIAMSBURG 2 N	37.3017, -76.7039	69.882	10.032	10.65	4.621	11347	89
WILLIAMSBURG 1.4 ENE	37.278, -76.6839	73.163	1.972	3.281	0.894	0	1
WILLIAMSBURG 3.2 W	37.2745, -76.7641	125.0	3.806	55.118	1.922	1	0
NEWPORT NEWS INTL AP	37.1322, -76.4939	36.089	16.452	33.793	7.959	3	0
W PT 2 NW	37.5656, -76.8	20.013	18.981	49.869	9.488	1	0

Attachment C

Delineation Figures

Preliminary Wetlands & Other Surface Waters Summary Table			
Aquatic Resource Classification	Area		Stream Length (lf)
	Square Feet	Acre	
PFO	400,013	9.18	-
PSS	1,993	0.05	-
PEM	846	0.02	-
R5UB - Perennial	-	-	2,055
R4SCB - Intermittent	-	-	3,688
R6 - Ephemeral	-	-	897
Total	402,852	9.25	6,640





DELINEATION LIMITS
WETLAND BOUNDARY FLAGS

DATA POINTS
- UP
- WET
- STREAM POINTS

APPROXIMATE STREAM CENTERLINE

COWARDIN
- R4SBC
- R5UB
- R6

WETLANDS & OTHER SURFACE WATERS
- PEM
- PFO
- PSS
- R5UB
- R6
- R4SBC

NOTES:
1. WETLAND/UPLAND BOUNDARY IS BASED ON GPS DATA. BOUNDARY/FLAGGING WAS NOT SURVEY LOCATED.
2. WETLAND DELINEATION IS PRELIMINARY & SUBJECT TO CONFIRMATION BY THE USACE.
3. 2021 VBMP AERIAL IMAGERY
4. 5 FT CONTOURS BASED ON LIDAR DATA (VIRGINIA LIDAR DATASET)
5. PERENNIAL STREAM DETERMINATION LIMITED TO ONSITE FEATURES
6. STREAM CL IS APPROXIMATE BASED ON FIELD DATA, AERIAL IMAGES, & LIDAR

0 400 800 FT

1 IN =400 FT

HEDERA SOLAR
JAMES CITY COUNTY, VIRGINIA

PRELIMINARY WETLANDS & OTHER SURFACE WATERS DELINEATION

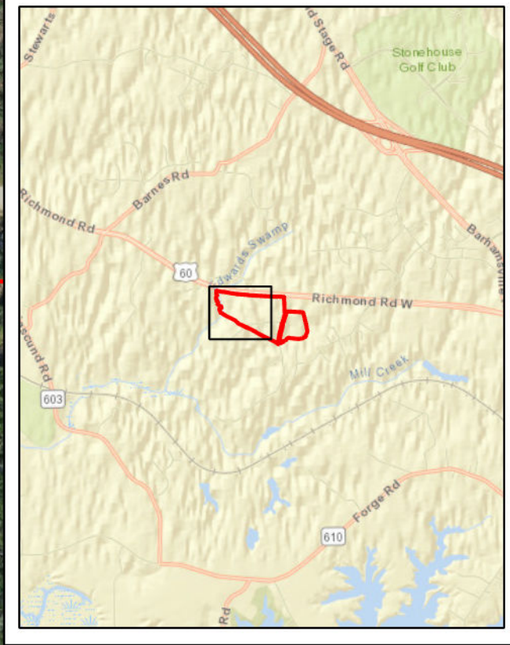
Kimley»Horn

N

DATE: 05-17-2024

FIGURE: 1





DELINEATION LIMITS
WETLAND BOUNDARY FLAGS

DATA POINTS
- UP
- WET
- STREAM POINTS

APPROXIMATE STREAM CENTERLINE

COWARDIN
- R4SBC
- R5UB
- R6

WETLANDS & OTHER SURFACE WATERS
- PEM
- PFO
- PSS
- R5UB
- R6
- R4SBC

NOTES:
1. WETLAND/UPLAND BOUNDARY IS BASED ON GPS DATA. BOUNDARY/FLAGGING WAS NOT SURVEY LOCATED.
2. WETLAND DELINEATION IS PRELIMINARY & SUBJECT TO CONFIRMATION BY THE USACE.
3. 2021 VBMP AERIAL IMAGERY
4. 5 FT CONTOURS BASED ON LIDAR DATA (VIRGINIA LIDAR DATASET)
5. PERENNIAL STREAM DETERMINATION LIMITED TO ONSITE FEATURES
6. STREAM CL IS APPROXIMATE BASED ON FIELD DATA, AERIAL IMAGES, & LIDAR

0 200 400 FT

1 IN =200 FT

HEDERA SOLAR
JAMES CITY COUNTY, VIRGINIA

PRELIMINARY WETLANDS & OTHER SURFACE WATERS DELINEATION

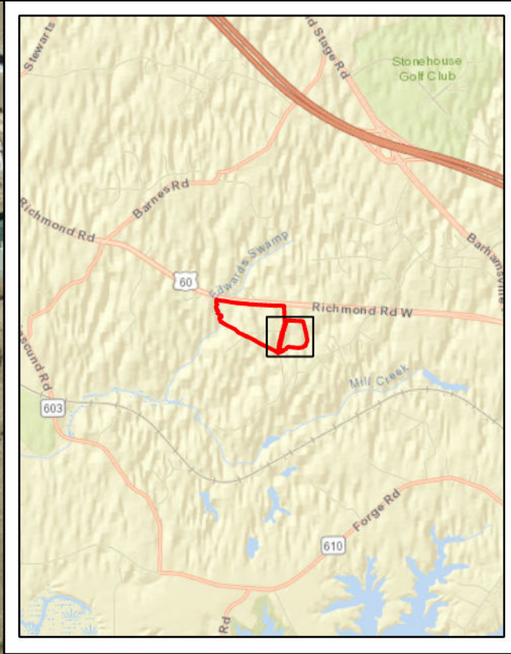
Kimley»Horn

N

DATE: 05-17-2024

FIGURE: 1.1





DELINEATION LIMITS
WETLAND BOUNDARY FLAGS

DATA POINTS
- UP
- WET
- STREAM POINTS

APPROXIMATE STREAM CENTERLINE

COWARDIN
- R4SBC
- R5UB
- R6

WETLANDS & OTHER SURFACE WATERS
- PEM
- PFO
- PSS
- R5UB
- R6
- R4SBC

NOTES:
1. WETLAND/UPLAND BOUNDARY IS BASED ON GPS DATA. BOUNDARY/FLAGGING WAS NOT SURVEY LOCATED.
2. WETLAND DELINEATION IS PRELIMINARY & SUBJECT TO CONFIRMATION BY THE USACE.
3. 2021 VBMP AERIAL IMAGERY
4. 5 FT CONTOURS BASED ON LIDAR DATA (VIRGINIA LIDAR DATASET)
5. PERENNIAL STREAM DETERMINATION LIMITED TO ONSITE FEATURES
6. STREAM CL IS APPROXIMATE BASED ON FIELD DATA, AERIAL IMAGES, & LIDAR

0 150 300 FT

1 IN =150 FT

HEDERA SOLAR
JAMES CITY COUNTY, VIRGINIA

PRELIMINARY WETLANDS & OTHER SURFACE WATERS DELINEATION

Kimley»Horn

N

DATE: 05-17-2024

FIGURE: 1.2

Attachment D

Surface Waters Summary Table

Table 1. Delineated Wetlands and Other Surface Waters Summary Table						
Wetland/ Water ID	Latitude	Longitude	Cowardin Classification	Stream Length	Wetlands/Waters Area	
	Decimal Degrees			LF	Sq Ft	Ac
A	37.39953629	-76.83784662	PFO	-	113,113	2.60
A.1	37.39965147	-76.83961339	PFO	-	4,053	0.09
A.2	37.39922382	-76.83964325	PFO	-	1,678	0.04
A.3	37.39893347	-76.83963595	PEM	-	846	0.02
A.4	37.3989659	-76.8396847	PFO	-	953	0.02
B	37.39971353	-76.84004118	PFO	-	563	0.01
C	37.39998777	-76.84015843	PFO	-	934	0.02
D	37.40086253	-76.83806355	PFO	-	2,587	0.06
E	37.40336054	-76.84712716	PFO	-	208,128	4.78
E.1	37.40136425	-76.84485515	PFO	-	8,402	0.19
F	37.40352666	-76.84249417	PFO	-	49,108	1.13
F.1	37.40395519	-76.84223553	PFO	-	10,496	0.24
G	37.4042102	-76.84487987	PSS	-	1,993	0.05
A-1	37.39940767	-76.83768618	R5UB	869	-	-
A.1-1	37.40003708	-76.83974694	R4SBC	224	-	-
A-2	37.40021037	-76.83809129	R4SBC	603	-	-
A-2.1	37.40118384	-76.83801641	R6	58	-	-
A-2.2	37.40119178	-76.83793037	R6	89	-	-
A.2-1	37.40001033	-76.84037326	R4SBC	88	-	-
A.2-2	37.39961293	-76.8399614	R4SBC	455	-	-
A-3	37.39981896	-76.83834447	R6	201	-	-
A-4	37.39993249	-76.83626366	R6	227	-	-
E	37.40340131	-76.84736621	R5UB	1,186	-	-
E-1	37.40357202	-76.84673212	R6	322	-	-
E.1-1	37.40131643	-76.84464356	R4SBC	372	-	-
E-2	37.40259151	-76.84613662	R4SBC	452	-	-
E-3	37.40233376	-76.84590007	R4SBC	328	-	-
F-1	37.40322322	-76.84236514	R4SBC	912	-	-
F.1-1	37.40396735	-76.8422505	R4SBC	253	-	-

Attachment E

Data Forms

Attachment E

Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-17

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.WET.1

Investigator(s): B. Runnion, L. Winne Section, Township, Range:

Landform (hillslope, terrace, etc.): Drainage Pattern Local relief (concave, convex, none): Concave Slope (%): 5-7

Subregion (LRR or MLRA): Lat: 37.3999441 Long: -76.84010877 Datum: NAD 83

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:

Data point was taken in wetland bowl adjacent to stream.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP.WET.1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	10	✔	FAC
2. Kalmia latifolia	10	✔	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Kalmia latifolia	20	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		
Herb Stratum (Plot size: 30 ft r)			
1. Woodwardia areolata	10	✔	OBL
2. Ilex verticillata	5	✔	FACW
3. Microstegium vimineum	5	✔	FAC
4. Platanthera clavellata	5	✔	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25 = Total Cover		
50% of total cover: 12.50	20% of total cover: 5.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.42 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	5	x 2 =	10
FAC species	15	x 3 =	45
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	65 (A)		190 (B)

Prevalence Index = B/A = 2.92

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No

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

SOIL

Sampling Point: DP.WET.1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 2/2	100					Clay Loam	
3 - 8	10YR 5/2	95	10YR 6/8	5	C	M	Sandy Clay Loam	
8 - 20	10YR 3/2	95	10YR 6/8	5	C	M	Sandy Clay Loam	
20 - 24	10YR 4/2	100					Sandy Loam	
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-17

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.UP.1

Investigator(s): B. Runnion, L. Winne Section, Township, Range:

Landform (hillslope, terrace, etc.): Drainage Pattern Local relief (concave, convex, none): Concave Slope (%): 10-15

Subregion (LRR or MLRA): P 133A Lat: 37.40044972 Long: -76.8398416 Datum: NAD 83

Soil Map Unit Name: 11C - Craven-Uchee complex, 6 to 10 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point was taken in upland drainage feature upslope from head cut.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No wetland hydrology present in upper 24 inches of soil.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP.UP.1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liriodendron tulipifera	15	✔	FACU
2. Quercus rubra	10	✔	FACU
3. Ilex opaca	7	✔	FAC
4.			
5.			
6.			
7.			
8.			
	32 = Total Cover		
50% of total cover: 16.00	20% of total cover: 6.40		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Carpinus caroliniana	7	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	7 = Total Cover		
50% of total cover: 3.50	20% of total cover: 1.40		
Herb Stratum (Plot size: 30 ft r)			
1. Vaccinium angustifolium	12	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	12 = Total Cover		
50% of total cover: 6.00	20% of total cover: 2.40		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	14	x 3 =	42
FACU species	37	x 4 =	148
UPL species	0	x 5 =	0
Column Totals:	51 (A)		190 (B)

Prevalence Index = B/A = 3.72

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

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

SOIL

Sampling Point: DP.UP.1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 3/3	100					Sandy Loam	
3 - 10	10YR 4/4	100					Sandy Loam	
10 - 24	10YR 5/6						Sandy Loam	
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-17

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.WET.2

Investigator(s): B. Runnion, L. Winne Section, Township, Range:

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Linear Slope (%): 0

Subregion (LRR or MLRA): P 133A Lat: 37.39920395 Long: -76.83960832 Datum: NAD 83

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point was taken in wetland depression in easement along roadside.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ✔	No _____	Depth (inches): 1
Water Table Present?	Yes ✔	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

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

Sampling Point: DP.WET.2

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Pinus taeda	5	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	5 = Total Cover		
50% of total cover: 2.50	20% of total cover: 1.00		
Herb Stratum (Plot size: 30 ft r)			
1. Murdannia keisak	40	✔	OBL
2. Juncus effusus	25	✔	OBL
3. Carex crinita	9		FACW
4. Onoclea sensibilis	7		FACW
5. Saururus cernuus	7		OBL
6. Solidago altissima	2		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
50% of total cover: 45.00	20% of total cover: 18.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	72	x 1 =	72
FACW species	16	x 2 =	32
FAC species	5	x 3 =	15
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	95 (A)		127 (B)

Prevalence Index = B/A = 1.33

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No

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

SOIL

Sampling Point: DP.WET.2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	2.5Y 3/2	100					Silt Loam	bordering muck
3 - 8	2.5Y 2.5/1	100					Mucky Loam/Clay	Very saturated
-								
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

Soil too wet to retrieve beyond 8 inches.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-17

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.UP.2

Investigator(s): B. Runnion, L. Winne Section, Township, Range:

Landform (hillslope, terrace, etc.): Drainage Pattern Local relief (concave, convex, none): Concave Slope (%): 8-10

Subregion (LRR or MLRA): P 133A Lat: 37.4001632 Long: -76.84046237 Datum: NAD 83

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point was taken in upland drainage pattern upslope from head cut.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No wetland hydrology present in upper 24 inches of soil.

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

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	15	✔	FAC
2. Carya glabra	10	✔	FACU
3. Kalmia latifolia	10	✔	FACU
4.			
5.			
6.			
7.			
8.			
	35 = Total Cover		
50% of total cover: 17.50	20% of total cover: 7.00		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Kalmia latifolia	8	✔	FACU
2. Ilex opaca	5	✔	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	13 = Total Cover		
50% of total cover: 6.50	20% of total cover: 2.60		
Herb Stratum (Plot size: 30 ft r)			
1. Parathelypteris noveboracensis	15	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15 = Total Cover		
50% of total cover: 7.50	20% of total cover: 3.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	28	x 4 =	112
UPL species	0	x 5 =	0
Column Totals:	63 (A)		217 (B)

Prevalence Index = B/A = 3.44

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☐ No ✔

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

SOIL

Sampling Point: DP.UP.2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 3	2.5Y 4/3	100					Clay Loam	
3 - 20	2.5Y 5/4	100					Clay Loam	
20 - 24	2.5Y 6/4	100					Sandy Loam	
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DB.WET.A1

Investigator(s): A. Bertka, J. Sanne Section, Township, Range:

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-5

Subregion (LRR or MLRA): P 133A Lat: 37.40352772 Long: -76.84647355 Datum: NAD 83

Soil Map Unit Name: 15 E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:
wetland feature at bottom of valley within field previously used for silvaculure

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:
Multiple primary hydrology indicators present

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

Sampling Point: DB.WET.A1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	5	✔	FAC
2. Ulmus alata	2	✔	FACU
3.			
4.			
5.			
6.			
	7 = Total Cover		
50% of total cover: 3.50	20% of total cover: 1.40		
Sapling Stratum (Plot size: 30 ft r)			
1. Salix caroliniana	10	✔	OBL
2. Ilex opaca	5	✔	FAC
3. Pinus taeda	5	✔	FAC
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		
Shrub Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 30 ft r)			
1. Juncus effusus	80	✔	OBL
2. Osmundastrum cinnamomeum	15		FACW
3. Rubus pensilvanicus	10		FAC
4. Scirpus cyperinus	10		OBL
5. Viburnum dentatum	5		FAC
6. Woodwardia areolata	5		OBL
7.			
8.			
9.			
10.			
11.			
	125 = Total Cover		
50% of total cover: 62.50	20% of total cover: 25.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	105	x 1 =	105
FACW species	15	x 2 =	30
FAC species	30	x 3 =	90
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	152 (A)		233 (B)

Prevalence Index = B/A = 1.53

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✔ No ___

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

SOIL

Sampling Point: DB.WET.A1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/2	100					Sandy Clay Loam	
4 - 14	10YR 4/2	95	10YR 4/6	5	C		Sandy Clay Loam	
14 - 18	10YR 4/1	100					Sandy Clay Loam	
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

Hydric soil present.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DB.UP.A1

Investigator(s): A. Bertka, J. Sanne Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 5-10

Subregion (LRR or MLRA): P 133A Lat: 37.40350922 Long: -76.84650752 Datum: NAD 83

Soil Map Unit Name: 15 E - Emporia complex, 15 to 20 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:
Data point taken in uplands located on a hillslope adjacent to wetland.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

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

Sampling Point: DB.UP.A1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	15	✔	FAC
2. Magnolia virginiana	10	✔	FACW
3.			
4.			
5.			
6.			
	25 = Total Cover		
50% of total cover: 12.50	20% of total cover: 5.00		
Sapling Stratum (Plot size: 30 ft r)			
1. Ilex opaca	10	✔	FAC
2. Fagus grandifolia	5	✔	FACU
3. Magnolia virginiana	5	✔	FACW
4. Pinus taeda	5	✔	FAC
5.			
6.			
	25 = Total Cover		
50% of total cover: 12.50	20% of total cover: 5.00		
Shrub Stratum (Plot size: 30 ft r)			
1. Decodon verticillatus	2		OBL
2.			
3.			
4.			
5.			
6.			
	2 = Total Cover		
50% of total cover: 1.00	20% of total cover: 0.40		
Herb Stratum (Plot size: 30 ft r)			
1. Rubus pensilvanicus	15	✔	FAC
2. Vaccinium pallidum	10	✔	
3. Andropogon virginicus	5		FAC
4. Aralia spinosa	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	35 = Total Cover		
50% of total cover: 17.50	20% of total cover: 7.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	15	x 2 =	30
FAC species	55	x 3 =	165
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	77 (A)		217 (B)

Prevalence Index = B/A = 2.81

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✔ No ___

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

SOIL

Sampling Point: DB.UP.A1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 2/1	100					Sandy Loam	
2 - 4	2.5Y 4/2	100					Sandy Loam	
4 - 12	2.5Y 5/6	100					Sandy Loam	
12 - 24	2.5Y 6/8	60					Sandy Loam	
12 - 24	2.5Y 6/4	40					Sandy Loam	
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DB.UP.D1

Investigator(s): A. Bertka, J. Sanne Section, Township, Range:

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): P 133A Lat: 37.40219713 Long: -76.8415766 Datum: NAD 83

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:
upland soil point taken on top of hill within hardwood forest

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

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

Sampling Point: DB.UP.D1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	70	✔	FAC
2. Fagus grandifolia	10		FACU
3. Liquidambar styraciflua	10		FAC
4.			
5.			
6.			
	90	= Total Cover	
50% of total cover: 45.00	20% of total cover: 18.00		
Sapling Stratum (Plot size: 30 ft r)			
1. Ilex opaca	10	✔	FAC
2. Fagus grandifolia	5	✔	FACU
3. Quercus alba	5	✔	FACU
4.			
5.			
6.			
	20	= Total Cover	
50% of total cover: 10.00	20% of total cover: 4.00		
Shrub Stratum (Plot size: 30 ft r)			
1. Vaccinium corymbosum	10	✔	FACW
2.			
3.			
4.			
5.			
6.			
	10	= Total Cover	
50% of total cover: 5.00	20% of total cover: 2.00		
Herb Stratum (Plot size: 30 ft r)			
1. Dendrolycopodium obscurum	25	✔	FACU
2. Polystichum acrostichoides	15	✔	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	40	= Total Cover	
50% of total cover: 20.00	20% of total cover: 8.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.85 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	90	x 3 =	270
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	160 (A)		530 (B)

Prevalence Index = B/A = 3.31

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes _____ No ✔

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

SOIL

Sampling Point: DB.UP.D1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	2.5Y 4/3	100					Clay Loam	
2 - 24	2.5Y 5/4	100					Clay Loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DB.WET.D1

Investigator(s): A. Bertka, J. Sanne Section, Township, Range:

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Linear Slope (%): 0-2

Subregion (LRR or MLRA): P 133A Lat: 37.40223505 Long: -76.84165923 Datum: NAD 83

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:
Data point taken in bowled wetland at toe of hillslope.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 0
Water Table Present?	Yes ✔	No ____	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 3

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

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

Sampling Point: DB.WET.D1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	40	✔	FAC
2. Liquidambar styraciflua	10		FAC
3. Carpinus caroliniana	5		FAC
4.			
5.			
6.			
	55	= Total Cover	
50% of total cover: 27.50	20% of total cover: 11.00		

Sapling Stratum (Plot size: 30 ft r)			
1. Carpinus caroliniana	5	✔	FAC
2. Ilex opaca	5	✔	FAC
3. Liquidambar styraciflua	5	✔	FAC
4. Liriodendron tulipifera	5	✔	FACU
5.			
6.			
	20	= Total Cover	
50% of total cover: 10.00	20% of total cover: 4.00		

Shrub Stratum (Plot size: 30 ft r)			
1. Vaccinium corymbosum	10	✔	FACW
2. Viburnum dentatum	10	✔	FAC
3.			
4.			
5.			
6.			
	20	= Total Cover	
50% of total cover: 10.00	20% of total cover: 4.00		

Herb Stratum (Plot size: 30 ft r)			
1. Juncus effusus	20	✔	OBL
2. Parathelypteris noveboracensis	20	✔	FAC
3. Woodwardia areolata	20	✔	OBL
4. Lindernia dubia	10		OBL
5. Dendrolycopodium obscurum	5		FACU
6. Magnolia virginiana	5		FACW
7. Polystichum acrostichoides	5		FACU
8.			
9.			
10.			
11.			
	85	= Total Cover	
50% of total cover: 42.50	20% of total cover: 17.00		

Woody Vine Stratum (Plot size: 30 ft r)			
1. Parthenocissus quinquefolia	5	✔	FACU
2.			
3.			
4.			
5.			
	5	= Total Cover	
50% of total cover: 2.50	20% of total cover: 1.00		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 81.81 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	15	x 2 =	30
FAC species	100	x 3 =	300
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	185 (A)		460 (B)

Prevalence Index = B/A = 2.48

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✔ No ___

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

SOIL

Sampling Point: DB.WET.D1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/2	100					Sandy Clay Loam	
4 - 12	2.5Y 5/1	100					Sandy Clay Loam	
12 - 24	2.5Y 6/1	90	10YR 6/8	10	C		Sandy Clay Loam	
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: BR.DP.UP.1

Investigator(s): B. Runnion, B. Haywood Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 10-15

Subregion (LRR or MLRA): P 133A Lat: 37.40216242 Long: -76.84520915 Datum: WGS 84

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point taken on hill slope upslope from wetland feature.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No wetland hydrology present.

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

Sampling Point: BR.DP.UP.1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	15	✔	FAC
2. Acer rubrum	5	✔	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Vaccinium pallidum	40	✔	
2. Vaccinium pallidum	40	✔	
3. Ilex opaca	10		FAC
4. Acer rubrum	5		FAC
5. Liriodendron tulipifera	5		FACU
6.			
7.			
8.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Herb Stratum (Plot size: 30 ft r)			
1. Juncus effusus	5	✔	OBL
2. Pteridium aquilinum	5	✔	FACU
3. Eupatorium capillifolium	2		FACU
4. Mitchella repens	2		FACU
5. Woodwardia areolata	2		OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	16 = Total Cover		
50% of total cover: 8.00	20% of total cover: 3.20		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Rubus argutus	40	✔	FAC
2.			
3.			
4.			
5.			
	40 = Total Cover		
50% of total cover: 20.00	20% of total cover: 8.00		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	7	x 1 =	7
FACW species	0	x 2 =	0
FAC species	75	x 3 =	225
FACU species	14	x 4 =	56
UPL species	0	x 5 =	0
Column Totals:	96 (A)		288 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ____

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

SOIL

Sampling Point: BR.DP.UP.1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 3/2	100					Loam	
2 - 6	10YR 4/3	100					Sandy Loam	
6 - 20	10YR 4/4	100					Sandy Loam	
20 - 24	10YR 5/8	100					Sandy Loam	
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.BR.WET.1

Investigator(s): B. Runnion, B. Haywood Section, Township, Range:

Landform (hillslope, terrace, etc.): Drainage Pattern Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR or MLRA): P 133A Lat: 37.4039458 Long: -76.84234243 Datum: WGS 84

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: Upland

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point taken in wetland adjacent to upland hill slope.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes ✔	No _____	Depth (inches): 5
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

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

Sampling Point: DP.BR.WET.1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus americana	15	✔	FACU
2. Ulmus americana	15	✔	FAC
3. Carpinus caroliniana	10		FAC
4. Nyssa sylvatica	10		FAC
5. Quercus alba	5		FACU
6.			
7.			
8.			
	55 = Total Cover		
50% of total cover: 27.50	20% of total cover: 11.00		

Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Alnus serrulata	20	✔	FACW
2. Ilex opaca	10	✔	FAC
3. Liquidambar styraciflua	10	✔	FAC
4. Magnolia virginiana	5		FACW
5. Viburnum dentatum	5		FAC
6. Viburnum nudum	5		FACW
7.			
8.			
	55 = Total Cover		
50% of total cover: 27.50	20% of total cover: 11.00		

Herb Stratum (Plot size: 30 ft r)			
1. Woodwardia areolata	50	✔	OBL
2. Osmunda cinnamomea	15		
3. Parathelypteris noveboracensis	10		FAC
4. Viola sororia	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80 = Total Cover		
50% of total cover: 40.00	20% of total cover: 16.00		

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	30	x 2 =	60
FAC species	75	x 3 =	225
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	175 (A)		415 (B)

Prevalence Index = B/A = 2.37

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No

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

SOIL

Sampling Point: DP.BR.WET.1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 4/2	95	7.5YR 4/6	5	C	M	Silt Loam	
4 - 10	10YR 4/2	90	10YR 5/6	10	C	M	Silt Loam	
10 - 24	10YR 5/3	80	10YR 5/8		C	M	Clay Loam	
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.BR.UP.2

Investigator(s): B. Runnion, B. Haywood Section, Township, Range:

Landform (hillslope, terrace, etc.): Drainage Pattern Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR or MLRA): P 133A Lat: 37.40122328 Long: -76.84399133 Datum: WGS 84

Soil Map Unit Name: 11C - Craven-Uchee complex, 6 to 10 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point was taken upslope from stream headcut.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No wetland hydrology within upper 24 inches of soil.

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

Sampling Point: DP.BR.UP.2

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	40	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
50% of total cover: 20.00	20% of total cover: 8.00		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Ilex opaca	10	✔	FAC
2. Aralia spinosa	5	✔	FAC
3. Liquidambar styraciflua	5	✔	FAC
4. Liriodendron tulipifera	5	✔	FACU
5. Quercus alba	3		FACU
6.			
7.			
8.			
	28 = Total Cover		
50% of total cover: 14.00	20% of total cover: 5.60		
Herb Stratum (Plot size: 30 ft r)			
1. Lonicera japonica	5	✔	FACU
2. Polystichum acrostichoides	5	✔	FACU
3. Potentilla indica	2		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	12 = Total Cover		
50% of total cover: 6.00	20% of total cover: 2.40		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Rubus arcticus	20	✔	
2.			
3.			
4.			
5.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57.14 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	80 (A)		260 (B)

Prevalence Index = B/A = 3.25

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ____

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

SOIL

Sampling Point: DP.BR.UP.2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 4/8	100					Clay Loam	
2 - 15	10YR 4/8	95	7.5YR 5/6	5	C	M	Clay Loam	
15 - 18	10YR 6/8	100					Sandy Loam	
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.BR.UP.3

Investigator(s): B. Runnion, B. Haywood Section, Township, Range:

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 8-10

Subregion (LRR or MLRA): P 133A Lat: 37.40385755 Long: -76.84235445 Datum: WGS 84

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: Upland

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point taken on upland hill slope adjacent to wetland.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

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

Sampling Point: DP.BR.UP.3

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fagus grandifolia	20	✔	FACU
2. Ilex opaca	15	✔	FAC
3. Fraxinus americana	5		FACU
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
50% of total cover: 20.00	20% of total cover: 8.00		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Pinus taeda	25	✔	FAC
2. Vaccinium pallidum	20	✔	
3. Ilex opaca	5		FAC
4. Liriodendron tulipifera	5		FACU
5.			
6.			
7.			
8.			
	55 = Total Cover		
50% of total cover: 27.50	20% of total cover: 11.00		
Herb Stratum (Plot size: 30 ft r)			
1. Mitchella repens	5	✔	FACU
2. Platanthera leucophaea	3	✔	OBL
3. Smilax rotundifolia	2	✔	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10 = Total Cover		
50% of total cover: 5.00	20% of total cover: 2.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.66 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x 1 =	3
FACW species	0	x 2 =	0
FAC species	47	x 3 =	141
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	85 (A)		284 (B)

Prevalence Index = B/A = 3.34

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No

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

SOIL

Sampling Point: DP.BR.UP.3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 4/2	100					Sandy Loam	
2 - 15	10YR 5/4	100					Sandy Loam	
15 - 24	10YR 5/4	50					Clay Loam	
15 - 24	10YR 5/6						Clay Loam	
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

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Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 1 of 30

Photo No. 1



Remarks: Representative view of DP.Wet.1 vegetation

Location: DP.Wet.1

Photo No. 2



Remarks: Representative view of DP.Wet.1 vegetation

Location: DP.Wet.1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 2 of 30

Photo No. 3



Remarks: Representative view of DP.Wet.1 vegetation

Location: DP.Wet.1

Photo No. 4



Remarks: Representative view of DP.Wet.1 vegetation

Location: DP.Wet.1

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KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 3 of 30

Photo No. 5



Remarks: Representative view of soil at data point location

Location: DP.Wet.1

Photo No. 6



Remarks: Representative view of DP.Up.1 vegetation

Location: DP.Up.1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 4 of 30

Photo No. 7



Remarks: Representative view of DP.Up.1 vegetation

Location: DP.Up.1

Photo No. 8



Remarks: Representative view of DP.Up.1 vegetation

Location: DP.Up.1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
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Photo No. 9



Remarks: Representative view of DP.Up.1 vegetation

Location: DP.Up.1

Photo No. 10



Remarks: Representative view of soil at data point location

Location: DP.Up.1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 11



Remarks: Representative view of DP.Wet.2 vegetation

Location: DP.Wet.2

Photo No. 12



Remarks: Representative view of DP.Wet.2 vegetation

Location: DP.Wet.2

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 13



Remarks: Representative view of DP.Wet.2 vegetation

Location: DP.Wet.2

Photo No. 14



Remarks: Representative view of DP.Wet.2 vegetation

Location: DP.Wet.2

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 15



Remarks: Representative photo of data point sampling location

Location: DP.Wet.2

Photo No. 16



Remarks: Representative view of soil at data point location

Location: DP.Wet.2

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 9 of 30

Photo No. 17



Remarks: Representative view of DP.Up.2 vegetation

Location: DP.Up.2

Photo No. 18



Remarks: Representative view of DP.Up.2 vegetation

Location: DP.Up.2

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 10 of 30

Photo No. 19



Remarks: Representative view of DP.Up.2 vegetation

Location: DP.Up.2

Photo No. 20



Remarks: Representative view of DP.Up.2 vegetation

Location: DP.Up.2

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KHA Job No.: 113526017
KHA Rep.: Drew Bertka
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Page: 11 of 30

Photo No. 21



Remarks: Representative view of soil at data point location

Location: DP.Up.2

Photo No. 22



Remarks: Representative view of DB.Wet.A1 vegetation

Location: DB.Wet.A1

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KHA Job No.: 113526017
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Page: 12 of 30

Photo No. 23



Remarks: Representative view of DB.Wet.A1 vegetation

Location: DB.Wet.A1

Photo No. 24



Remarks: Representative view of DB.Wet.A1 vegetation

Location: DB.Wet.A1

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Photo No. 25



Remarks: Representative view of DB.Wet.A1 vegetation

Location: DB.Wet.A1

Photo No. 26



Remarks: Representative view of soil at data point location

Location: DB.Wet.A1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 27



Remarks: Representative view of DB.Up.A1 vegetation

Location: DB.Up.A1

Photo No. 28



Remarks: Representative view of DB.Up.A1 vegetation

Location: DB.Up.A1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 29



Remarks: Representative view of DB.Up.A1 vegetation

Location: DB.Up.A1

Photo No. 30



Remarks: Representative view of DB.Up.A1 vegetation

Location: DB.Up.A1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 31



Remarks: Representative view of soil at data point location

Location: DB.Up.A1

Photo No. 32



Remarks: Representative view of DB.Up.D1 vegetation

Location: DB.Up.D1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 33



Remarks: Representative view of DB.Up.D1 vegetation

Location: DB.Up.D1

Photo No. 34



Remarks: Representative view of DB.Up.D1 vegetation

Location: DB.Up.D1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 35



Remarks: Representative view of DB.Up.D1 vegetation

Location: DB.Up.D1

Photo No. 36



Remarks: Representative view of soil at data point location

Location: DB.Up.D1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 37



Remarks: Representative view of DB.Wet.D1 vegetation

Location: DB.Wet.D1

Photo No. 38



Remarks: Representative view of DB.Wet.D1 vegetation

Location: DB.Wet.D1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 39



Remarks: Representative view of DB.Wet.D1 vegetation

Location: DB.Wet.D1

Photo No. 40



Remarks: Representative view of soil at data point location

Location: DB.Wet.D1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 41



Remarks: Representative view of BR.DP.Up.1 vegetation

Location: BR.DP.Up.1

Photo No. 42



Remarks: Representative view of BR.DP.Up.1 vegetation

Location: BR.DP.Up.1

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Photograph Sheet

KHA Job No.: 113526017
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Date: May 15, 2024
Page: 22 of 30

Photo No. 43



Remarks: Representative view of BR.DP.Up.1 vegetation

Location: BR.DP.Up.1

Photo No. 44



Remarks: Representative view of BR.DP.Up.1 vegetation

Location: BR.DP.Up.1

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Photograph Sheet

KHA Job No.: 113526017
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Date: May 15, 2024
Page: 23 of 30

Photo No. 45



Remarks: Representative view of soil at data point location

Location: BR.DP.Up.1

Photo No. 46



Remarks: Representative view of DP.BR.Wet.1 vegetation

Location: DP.BR.Wet.1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 47



Remarks: Representative view of DP.BR.Wet.1 vegetation

Location: DP.BR.Wet.1

Photo No. 48



Remarks: Representative view of DP.BR.Wet.1 vegetation

Location: DP.BR.Wet.1

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Photograph Sheet

KHA Job No.: 113526017
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Date: May 15, 2024
Page: 25 of 30

Photo No. 49



Remarks: Representative view of DP.BR.Wet.1 vegetation

Location: DP.BR.Wet.1

Photo No. 50



Remarks: Representative view of soil at data point location

Location: DP.BR.Wet.1

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 51



Remarks: Representative view of DP.BR.Up.2 vegetation

Location: DP.BR.Up.2

Photo No. 52



Remarks: Representative view of DP.BR.Up.2 vegetation

Location: DP.BR.Up.2

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 53



Remarks: Representative view of DP.BR.Up.2 vegetation

Location: DP.BR.Up.2

Photo No. 54



Remarks: Representative view of DP.BR.Up.2 vegetation

Location: DP.BR.Up.2

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 55



Remarks: Representative view of soil at data point location

Location: DP.BR.Up.2

Photo No. 56



Remarks: Representative view of DP.BR.Up.3 vegetation

Location: DP.BR.Up.3

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Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 29 of 30

Photo No. 57



Remarks: Representative view of DP.BR.Up.3 vegetation

Location: DP.BR.Up.3

Photo No. 58



Remarks: Representative view of DP.BR.Up.3 vegetation

Location: DP.BR.Up.3

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Photograph Sheet

KHA Job No.: 113526017
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Date: May 15, 2024
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Photo No. 59



Remarks: Representative view of DP.BR.Up.3 vegetation

Location: DP.BR.Up.3

Photo No. 60



Remarks: Representative view of soil at data point location

Location: DP.BR.Up.3

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-17

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.WET.1

Investigator(s): B. Runnion, L. Winne Section, Township, Range:

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Linear Slope (%): 1

Subregion (LRR or MLRA): Lat: 37.3999441 Long: -76.84010877 Datum: NAD 83

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:

Data point was taken in depression adjacent to stream.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP.WET.1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	10	✔	FAC
2. Kalmia latifolia	10	✔	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Kalmia latifolia	20	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		
Herb Stratum (Plot size: 30 ft r)			
1. Woodwardia areolata	10	✔	OBL
2. Ilex verticillata	5	✔	FACW
3. Microstegium vimineum	5	✔	FAC
4. Platanthera clavellata	5	✔	OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	25 = Total Cover		
50% of total cover: 12.50	20% of total cover: 5.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.42 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	5	x 2 =	10
FAC species	15	x 3 =	45
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	65 (A)		190 (B)

Prevalence Index = B/A = 2.92

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No

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

SOIL

Sampling Point: DP.WET.1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 2/2	100					Clay Loam	
3 - 8	10YR 5/2	95	10YR 6/8	5	C	M	Sandy Clay Loam	
8 - 20	10YR 3/2	95	10YR 6/8	5	C	M	Sandy Clay Loam	
20 - 24	10YR 4/2	100					Sandy Loam	
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-17

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.UP.1

Investigator(s): B. Runnion, L. Winne Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): ~5

Subregion (LRR or MLRA): P 133A Lat: 37.40044972 Long: -76.8398416 Datum: NAD 83

Soil Map Unit Name: 11C - Craven-Uchee complex, 6 to 10 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point was taken in upland drainage feature upslope from head cut.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No visual observation of water table or saturation within the upper 24 in below ground surface

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: DP.UP.1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Liriodendron tulipifera	15	✔	FACU
2. Quercus rubra	10	✔	FACU
3. Ilex opaca	7	✔	FAC
4.			
5.			
6.			
7.			
8.			
	32 = Total Cover		
50% of total cover: 16.00	20% of total cover: 6.40		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Carpinus caroliniana	7	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	7 = Total Cover		
50% of total cover: 3.50	20% of total cover: 1.40		
Herb Stratum (Plot size: 30 ft r)			
1. Vaccinium angustifolium	12	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	12 = Total Cover		
50% of total cover: 6.00	20% of total cover: 2.40		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	14	x 3 =	42
FACU species	37	x 4 =	148
UPL species	0	x 5 =	0
Column Totals:	51 (A)		190 (B)

Prevalence Index = B/A = 3.72

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✔

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

SOIL

Sampling Point: DP.UP.1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 3	10YR 3/3	100					Sandy Loam	
3 - 10	10YR 4/4	100					Sandy Loam	
10 - 24	10YR 5/6	100					Sandy Loam	
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-17

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.WET.2

Investigator(s): B. Runnion, L. Winne Section, Township, Range:

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Linear Slope (%): 0

Subregion (LRR or MLRA): P 133A Lat: 37.39920395 Long: -76.83960832 Datum: NAD 83

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point was taken in wetland depression in easement along roadside.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ✔	No _____	Depth (inches): 1
Water Table Present?	Yes ✔	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

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

Sampling Point: DP.WET.2

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Pinus taeda	5	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	5 = Total Cover		
50% of total cover: 2.50	20% of total cover: 1.00		
Herb Stratum (Plot size: 30 ft r)			
1. Murdannia keisak	40	✔	OBL
2. Juncus effusus	25	✔	OBL
3. Carex crinita	9		FACW
4. Onoclea sensibilis	7		FACW
5. Saururus cernuus	7		OBL
6. Solidago altissima	2		FACU
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		
50% of total cover: 45.00	20% of total cover: 18.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	72	x 1 =	72
FACW species	16	x 2 =	32
FAC species	5	x 3 =	15
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	95 (A)		127 (B)

Prevalence Index = B/A = 1.33

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☑ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No

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

SOIL

Sampling Point: DP.WET.2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 3	2.5Y 3/2	100					Silt Loam	bordering muck
3 - 8	2.5Y 2.5/1	100					Mucky Loam/Clay	Very saturated
-								
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

Soil too wet to retrieve beyond 8 inches below ground surface.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-17

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.UP.2

Investigator(s): B. Runnion, L. Winne Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Linear Slope (%): 3-5

Subregion (LRR or MLRA): P 133A Lat: 37.4001632 Long: -76.84046237 Datum: NAD 83

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point was taken in upland drainage pattern upslope from head cut.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No visual observation of water table or saturation within the upper 24 in below ground surface.

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

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	15	✔	FAC
2. Carya glabra	10	✔	FACU
3. Kalmia latifolia	10	✔	FACU
4.			
5.			
6.			
7.			
8.			
	35 = Total Cover		
50% of total cover: 17.50	20% of total cover: 7.00		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Kalmia latifolia	8	✔	FACU
2. Ilex opaca	5	✔	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	13 = Total Cover		
50% of total cover: 6.50	20% of total cover: 2.60		
Herb Stratum (Plot size: 30 ft r)			
1. Parathelypteris noveboracensis	15	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15 = Total Cover		
50% of total cover: 7.50	20% of total cover: 3.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	35	x 3 =	105
FACU species	28	x 4 =	112
UPL species	0	x 5 =	0
Column Totals:	63 (A)		217 (B)

Prevalence Index = B/A = 3.44

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☐ No ✔

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

SOIL

Sampling Point: DP.UP.2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 3	2.5Y 4/3	100					Clay Loam	
3 - 20	2.5Y 5/4	100					Clay Loam	
20 - 24	2.5Y 6/4	100					Sandy Loam	
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DB.WET.A1

Investigator(s): A. Bertka, J. Sanne Section, Township, Range:

Landform (hillslope, terrace, etc.): Valley Local relief (concave, convex, none): Concave Slope (%): 0-5

Subregion (LRR or MLRA): P 133A Lat: 37.40352772 Long: -76.84647355 Datum: NAD 83

Soil Map Unit Name: 15 E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:
wetland feature at bottom of valley within field previously used for silvaculure

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ____	No ✔	Depth (inches): ____
Water Table Present?	Yes ✔	No ____	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:
Multiple primary hydrology indicators present

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

Sampling Point: DB.WET.A1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	5	✔	FAC
2. Ulmus americana	2	✔	FAC
3.			
4.			
5.			
6.			
	7 = Total Cover		
50% of total cover: 3.50	20% of total cover: 1.40		
Sapling Stratum (Plot size: 30 ft r)			
1. Salix caroliniana	10	✔	OBL
2. Ilex opaca	5	✔	FAC
3. Pinus taeda	5	✔	FAC
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		
Shrub Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 30 ft r)			
1. Juncus effusus	80	✔	OBL
2. Osmundastrum cinnamomeum	15		FACW
3. Rubus pensilvanicus	10		FAC
4. Scirpus cyperinus	10		OBL
5. Viburnum dentatum	5		FAC
6. Woodwardia areolata	5		OBL
7.			
8.			
9.			
10.			
11.			
	125 = Total Cover		
50% of total cover: 62.50	20% of total cover: 25.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	105	x 1 =	105
FACW species	15	x 2 =	30
FAC species	32	x 3 =	96
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	152 (A)		231 (B)

Prevalence Index = B/A = 1.51

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✔ No ___

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

SOIL

Sampling Point: DB.WET.A1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/2	100					Sandy Clay Loam	
4 - 14	10YR 4/2	95	10YR 4/6	5	C		Sandy Clay Loam	
14 - 18	10YR 4/1	100					Sandy Clay Loam	
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

Hydric soil present.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DB.UP.A1

Investigator(s): A. Bertka, J. Sanne Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): ~5

Subregion (LRR or MLRA): P 133A Lat: 37.40350922 Long: -76.84650752 Datum: NAD 83

Soil Map Unit Name: 15 E - Emporia complex, 15 to 20 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:
Data point taken in uplands located on a hillslope adjacent to wetland.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ____ No ✔

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

Remarks:

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

Sampling Point: DB.UP.A1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	15	✔	FAC
2. Magnolia virginiana	10	✔	FACW
3.			
4.			
5.			
6.			
	25 = Total Cover		
50% of total cover: 12.50	20% of total cover: 5.00		
Sapling Stratum (Plot size: 30 ft r)			
1. Ilex opaca	10	✔	FAC
2. Fagus grandifolia	5	✔	FACU
3. Magnolia virginiana	5	✔	FACW
4. Pinus taeda	5	✔	FAC
5.			
6.			
	25 = Total Cover		
50% of total cover: 12.50	20% of total cover: 5.00		
Shrub Stratum (Plot size: 30 ft r)			
1. Decodon verticillatus	2		OBL
2.			
3.			
4.			
5.			
6.			
	2 = Total Cover		
50% of total cover: 1.00	20% of total cover: 0.40		
Herb Stratum (Plot size: 30 ft r)			
1. Rubus pensilvanicus	15	✔	FAC
2. Vaccinium pallidum	10	✔	
3. Andropogon virginicus	5		FAC
4. Aralia spinosa	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	35 = Total Cover		
50% of total cover: 17.50	20% of total cover: 7.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.71 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	15	x 2 =	30
FAC species	55	x 3 =	165
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	77 (A)		217 (B)

Prevalence Index = B/A = 2.81

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✔ No ___

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

SOIL

Sampling Point: DB.UP.A1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 2/1	100					Sandy Loam	
2 - 4	2.5Y 4/2	100					Sandy Loam	
4 - 12	2.5Y 5/6	100					Sandy Loam	
12 - 24	2.5Y 6/8	60					Sandy Loam	
12 - 24	2.5Y 6/4	40					Sandy Loam	
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

___ 1 cm Muck (A9) **(LRR O)**
___ 2 cm Muck (A10) **(LRR S)**
___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DB.UP.D1

Investigator(s): A. Bertka, J. Sanne Section, Township, Range:

Landform (hillslope, terrace, etc.): Hill Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): P 133A Lat: 37.40219713 Long: -76.8415766 Datum: NAD 83

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:
upland soil point taken on top of hill within hardwood forest

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: DB.UP.D1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	70	✔	FAC
2. Fagus grandifolia	10		FACU
3. Liquidambar styraciflua	10		FAC
4.			
5.			
6.			
	90	= Total Cover	
50% of total cover: 45.00	20% of total cover: 18.00		
Sapling Stratum (Plot size: 30 ft r)			
1. Ilex opaca	10	✔	FAC
2. Fagus grandifolia	5	✔	FACU
3. Quercus alba	5	✔	FACU
4.			
5.			
6.			
	20	= Total Cover	
50% of total cover: 10.00	20% of total cover: 4.00		
Shrub Stratum (Plot size: 30 ft r)			
1. Vaccinium corymbosum	10	✔	FACW
2.			
3.			
4.			
5.			
6.			
	10	= Total Cover	
50% of total cover: 5.00	20% of total cover: 2.00		
Herb Stratum (Plot size: 30 ft r)			
1. Dendrolycopodium obscurum	25	✔	FACU
2. Polystichum acrostichoides	15	✔	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	40	= Total Cover	
50% of total cover: 20.00	20% of total cover: 8.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
		= Total Cover	
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 42.85 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	90	x 3 =	270
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	160 (A)		530 (B)

Prevalence Index = B/A = 3.31

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes _____ No ✔

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

SOIL

Sampling Point: DB.UP.D1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 2	2.5Y 4/3	100					Clay Loam	
2 - 24	2.5Y 5/4	100					Clay Loam	
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DB.WET.D1

Investigator(s): A. Bertka, J. Sanne Section, Township, Range:

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Linear Slope (%): 0-2

Subregion (LRR or MLRA): P 133A Lat: 37.40223505 Long: -76.84165923 Datum: NAD 83

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

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

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

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

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

Remarks:
Data point taken in bowled wetland at toe of hillslope.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ✔	No ____	Depth (inches): 0
Water Table Present?	Yes ✔	No ____	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes ✔	No ____	Depth (inches): 3

Wetland Hydrology Present? Yes ✔ No ____

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

Remarks:

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

Sampling Point: DB.WET.D1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	40	✔	FAC
2. Liquidambar styraciflua	10		FAC
3. Carpinus caroliniana	5		FAC
4.			
5.			
6.			
	55	= Total Cover	
50% of total cover: 27.50	20% of total cover: 11.00		

Sapling Stratum (Plot size: 30 ft r)			
1. Carpinus caroliniana	5	✔	FAC
2. Ilex opaca	5	✔	FAC
3. Liquidambar styraciflua	5	✔	FAC
4. Liriodendron tulipifera	5	✔	FACU
5.			
6.			
	20	= Total Cover	
50% of total cover: 10.00	20% of total cover: 4.00		

Shrub Stratum (Plot size: 30 ft r)			
1. Vaccinium corymbosum	10	✔	FACW
2. Viburnum dentatum	10	✔	FAC
3.			
4.			
5.			
6.			
	20	= Total Cover	
50% of total cover: 10.00	20% of total cover: 4.00		

Herb Stratum (Plot size: 30 ft r)			
1. Juncus effusus	20	✔	OBL
2. Parathelypteris noveboracensis	20	✔	FAC
3. Woodwardia areolata	20	✔	OBL
4. Lindernia dubia	10		OBL
5. Dendrolycopodium obscurum	5		FACU
6. Magnolia virginiana	5		FACW
7. Polystichum acrostichoides	5		FACU
8.			
9.			
10.			
11.			
	85	= Total Cover	
50% of total cover: 42.50	20% of total cover: 17.00		

Woody Vine Stratum (Plot size: 30 ft r)			
1. Parthenocissus quinquefolia	5	✔	FACU
2.			
3.			
4.			
5.			
	5	= Total Cover	
50% of total cover: 2.50	20% of total cover: 1.00		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 9 (A)

Total Number of Dominant Species Across All Strata: 11 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 81.81 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	15	x 2 =	30
FAC species	100	x 3 =	300
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	185 (A)		460 (B)

Prevalence Index = B/A = 2.48

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ✔ No ___

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

SOIL

Sampling Point: DB.WET.D1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 2/2	100					Sandy Clay Loam	
4 - 12	2.5Y 5/1	100					Sandy Clay Loam	
12 - 24	2.5Y 6/1	90	10YR 6/8	10	C		Sandy Clay Loam	
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: BR.DP.UP.1

Investigator(s): B. Runnion, B. Haywood Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 5-7

Subregion (LRR or MLRA): P 133A Lat: 37.40216242 Long: -76.84520915 Datum: WGS 84

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point taken on hill slope upslope from wetland feature.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No visual observation of water table or saturation within the upper 24 in below ground surface.

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

Sampling Point: BR.DP.UP.1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	15	✔	FAC
2. Acer rubrum	5	✔	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Vaccinium pallidum	40	✔	
2. Vaccinium pallidum	40	✔	
3. Ilex opaca	10		FAC
4. Acer rubrum	5		FAC
5. Liriodendron tulipifera	5		FACU
6.			
7.			
8.			
	100 = Total Cover		
50% of total cover: 50.00	20% of total cover: 20.00		
Herb Stratum (Plot size: 30 ft r)			
1. Juncus effusus	5	✔	OBL
2. Pteridium aquilinum	5	✔	FACU
3. Eupatorium capillifolium	2		FACU
4. Mitchella repens	2		FACU
5. Woodwardia areolata	2		OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	16 = Total Cover		
50% of total cover: 8.00	20% of total cover: 3.20		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Rubus argutus	40	✔	FAC
2.			
3.			
4.			
5.			
	40 = Total Cover		
50% of total cover: 20.00	20% of total cover: 8.00		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.00 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	7	x 1 =	7
FACW species	0	x 2 =	0
FAC species	75	x 3 =	225
FACU species	14	x 4 =	56
UPL species	0	x 5 =	0
Column Totals:	96 (A)		288 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ____

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

SOIL

Sampling Point: BR.DP.UP.1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 3/2	100					Loam	
2 - 6	10YR 4/3	100					Sandy Loam	
6 - 20	10YR 4/4	100					Sandy Loam	
20 - 24	10YR 5/8	100					Sandy Loam	
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.BR.WET.1

Investigator(s): B. Runnion, B. Haywood Section, Township, Range:

Landform (hillslope, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave Slope (%): 3-5

Subregion (LRR or MLRA): P 133A Lat: 37.4039458 Long: -76.84234243 Datum: WGS 84

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: Upland

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point taken in wetland adjacent to upland hill slope.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes _____	No ✔	Depth (inches): _____
Water Table Present?	Yes ✔	No _____	Depth (inches): 5
Saturation Present? (includes capillary fringe)	Yes ✔	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✔ No _____

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

Remarks:

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

Sampling Point: DP.BR.WET.1

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus americana	15	✔	FACU
2. Ulmus americana	15	✔	FAC
3. Carpinus caroliniana	10		FAC
4. Nyssa sylvatica	10		FAC
5. Quercus alba	5		FACU
6.			
7.			
8.			
	55 = Total Cover		
50% of total cover: 27.50	20% of total cover: 11.00		

Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Alnus serrulata	20	✔	FACW
2. Ilex opaca	10	✔	FAC
3. Liquidambar styraciflua	10	✔	FAC
4. Magnolia virginiana	5		FACW
5. Viburnum dentatum	5		FAC
6. Viburnum nudum	5		FACW
7.			
8.			
	55 = Total Cover		
50% of total cover: 27.50	20% of total cover: 11.00		

Herb Stratum (Plot size: 30 ft r)			
1. Woodwardia areolata	50	✔	OBL
2. Osmunda cinnamomea	15		
3. Parathelypteris noveboracensis	10		FAC
4. Viola sororia	5		FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80 = Total Cover		
50% of total cover: 40.00	20% of total cover: 16.00		

Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	30	x 2 =	60
FAC species	75	x 3 =	225
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	175 (A)		415 (B)

Prevalence Index = B/A = 2.37

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No

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

SOIL

Sampling Point: DP.BR.WET.1

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 4	10YR 4/2	95	7.5YR 4/6	5	C	M	Silt Loam	
4 - 10	10YR 4/2	90	10YR 5/6	10	C	M	Silt Loam	
10 - 24	10YR 5/3	80	10YR 5/8		C	M	Clay Loam	
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✔ **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.BR.UP.2

Investigator(s): B. Runnion, B. Haywood Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 5

Subregion (LRR or MLRA): P 133A Lat: 37.40122328 Long: -76.84399133 Datum: WGS 84

Soil Map Unit Name: 11C - Craven-Uchee complex, 6 to 10 percent slopes NWI classification: N/A

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point was taken upslope from stream headcut.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No visual observation of water table or saturation within the upper 24 in below ground surface.

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

Sampling Point: DP.BR.UP.2

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ilex opaca	40	✔	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
50% of total cover: 20.00	20% of total cover: 8.00		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Ilex opaca	10	✔	FAC
2. Aralia spinosa	5	✔	FAC
3. Liquidambar styraciflua	5	✔	FAC
4. Liriodendron tulipifera	5	✔	FACU
5. Quercus alba	3		FACU
6.			
7.			
8.			
	28 = Total Cover		
50% of total cover: 14.00	20% of total cover: 5.60		
Herb Stratum (Plot size: 30 ft r)			
1. Lonicera japonica	5	✔	FACU
2. Polystichum acrostichoides	5	✔	FACU
3. Potentilla indica	2		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	12 = Total Cover		
50% of total cover: 6.00	20% of total cover: 2.40		
Woody Vine Stratum (Plot size: 30 ft r)			
1. Rubus arcticus	20	✔	
2.			
3.			
4.			
5.			
	20 = Total Cover		
50% of total cover: 10.00	20% of total cover: 4.00		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 57.14 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	80 (A)		260 (B)

Prevalence Index = B/A = 3.25

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No ____

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

SOIL

Sampling Point: DP.BR.UP.2

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 4/8	100					Clay Loam	
2 - 15	10YR 4/8	95	7.5YR 5/6	5	C	M	Clay Loam	
15 - 18	10YR 6/8	100					Sandy Loam	
-								
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Hedera Solar City/County: James City County Sampling Date: 2024-04-22

Applicant/Owner: Hexagon Development, LLC State: Virginia Sampling Point: DP.BR.UP.3

Investigator(s): B. Runnion, B. Haywood Section, Township, Range:

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 5-8

Subregion (LRR or MLRA): P 133A Lat: 37.40385755 Long: -76.84235445 Datum: WGS 84

Soil Map Unit Name: 15E - Emporia complex, 15 to 25 percent slopes NWI classification: Upland

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

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

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

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

Remarks:

Data point taken on upland hill slope adjacent to wetland.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No visual observation of water table or saturation within the upper 24 in below ground surface.

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

Sampling Point: DP.BR.UP.3

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fagus grandifolia	20	✔	FACU
2. Ilex opaca	15	✔	FAC
3. Fraxinus americana	5		FACU
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		
50% of total cover: 20.00	20% of total cover: 8.00		
Sapling/Shrub Stratum (Plot size: 30 ft r)			
1. Pinus taeda	25	✔	FAC
2. Vaccinium pallidum	20	✔	
3. Ilex opaca	5		FAC
4. Liriodendron tulipifera	5		FACU
5.			
6.			
7.			
8.			
	55 = Total Cover		
50% of total cover: 27.50	20% of total cover: 11.00		
Herb Stratum (Plot size: 30 ft r)			
1. Mitchella repens	5	✔	FACU
2. Platanthera leucophaea	3	✔	OBL
3. Smilax rotundifolia	2	✔	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	10 = Total Cover		
50% of total cover: 5.00	20% of total cover: 2.00		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.66 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x 1 =	3
FACW species	0	x 2 =	0
FAC species	47	x 3 =	141
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	85 (A)		284 (B)

Prevalence Index = B/A = 3.34

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✔ No

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

SOIL

Sampling Point: DP.BR.UP.3

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 - 2	10YR 4/2	100					Sandy Loam	
2 - 15	10YR 5/4	100					Sandy Loam	
15 - 24	10YR 5/4	50					Clay Loam	
15 - 24	10YR 5/6						Clay Loam	
-								
-								
-								

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

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

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

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) **(LRR O)**
- ☐ 2 cm Muck (A10) **(LRR S)**
- ☐ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ☐ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ☐ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✔

Remarks:

Attachment F

Photo Log

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 1 of 13

Photo No. 1



Remarks: Representative view of Wetland A

Location: James City County

Photo No. 2



Remarks: Representative view of Wetland A

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 2 of 13

Photo No. 3



Remarks: Representative view of Wetland B

Location: James City County

Photo No. 4



Remarks: Representative view of Wetland B

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 5



Remarks: Representative view of Wetland C

Location: James City County

Photo No. 6



Remarks: Representative view of Wetland C

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 7



Remarks: Representative view of Wetland D

Location: James City County

Photo No. 8



Remarks: Representative view of Wetland D

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 9



Remarks: Represetnative view of Wetland E

Location: James City County

Photo No. 10



Remarks: Representative view of Wetland E

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 11



Remarks: Representative view of Wetland E

Location: James City County

Photo No. 12



Remarks: Represetnative view of Wetland E

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 13



Remarks: Representative view of Wetland E.1

Location: James City County

Photo No. 14



Remarks: Representative view of Wetland E.1

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 8 of 13

Photo No. 15



Remarks: Representative view of Wetland F

Location: James City County

Photo No. 16



Remarks: Representative view of Wetland F

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 9 of 13

Photo No. 17



Remarks: Representative view of Wetland A.1

Location: James City County

Photo No. 18



Remarks: Representative view of Wetland A.2

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 10 of 13

Photo No. 19



Remarks: Representative view of Wetland A.2

Location: James City County

Photo No. 20



Remarks: Representative view of Wetland A.4

Location: James City County

Kimley»Horn
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Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024

Photo No. 21



Remarks: Representative view of Wetland A.4

Location: James City County

Photo No. 22



Remarks: Representative view of Stream A-2.2 between Wetland B and Wetland A.2

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 12 of 13

Photo No. 23



Remarks: Representative view of Stream A-2.2 between Wetland B and Wetland A.2
Location: James City County

Photo No. 24



Remarks: Representative view of Stream A-4 into Wetland A

Location: James City County

Kimley»Horn
4525 Main Street, Suite 1000
Virginia Beach, VA 23462

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: Drew Bertka
Date: May 15, 2024
Page: 13 of 13

Photo No. 25



Remarks: Representative view of Stream A-4 into Wetland A

Location: James City County

Photo No. 26

Remarks:

Location:

Attachment G

VDEQ Stream Identification Field Data Forms

SF-1

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/17/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, L. Winne**_____

Landform (hillslope, terrace, etc.): _____**Drainage Pattern**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**3-5**_____

Lat: ____**37.40010213**_____ Long: _____**-76.84034733**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream.	**Stream Identified:** ☒ **Yes** ☐ **No**
Stream bed present: ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?**
☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	**Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☒ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☒ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☒ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☒ Evidence of thalweg
- ☒ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☒ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☐ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☐ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☒ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Intermittent stream above wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

SF-2

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/17/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, L. Winne**_____

Landform (hillslope, terrace, etc.): _____**Drainage Pattern**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**3-5**_____

Lat: ____**37.40034416**_____ Long: _____**-76.83975943**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream.	**Stream Identified:** ☒ **Yes** ☐ **No**
Stream bed present: ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?**
☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	**Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☐ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☐ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☒ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☐ Evidence of thalweg
- ☐ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☐ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☐ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☒ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Ephemeral stream above wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

SF-3

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/17/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, L. Winne**_____

Landform (hillslope, terrace, etc.): _____**Drainage Pattern**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**3-5**_____

Lat: ____**37.40007004**_____ Long: _____**-76.84050084**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream. **Stream bed present:** ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	**Stream Identified:** ☒ **Yes** ☐ **No**

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:** ☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?** **Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☒ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☒ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☒ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☐ Evidence of thalweg
- ☐ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☒ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☐ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☐ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☒ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Intermittend stream above wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

SF-4

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/17/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, L. Winne**_____

Landform (hillslope, terrace, etc.): _____**Drainage Pattern**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**3-5**_____

Lat: ____**37.40003826**_____ Long: _____**-76.83854043**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream. **Stream bed present:** ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	**Stream Identified:** ☒ **Yes** ☐ **No**

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:** ☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?** **Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☐ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☐ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☐ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☐ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☐ Evidence of thalweg
- ☒ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☐ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☐ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☒ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☐ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Ephemeral stream above wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☒ Ephemeral ☐ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/17/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, L. Winne**_____

Landform (hillslope, terrace, etc.): _____**Drainage Pattern**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**3-5**_____

Lat: ____**37.40022144**_____ Long: _____**-76.83639189**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream. **Stream bed present:** ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	**Stream Identified:** ☒ **Yes** ☐ **No**

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:** ☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?** **Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☐ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☐ Continuous bed and bank
- ☒ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☐ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☐ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☐ Evidence of thalweg
- ☒ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☐ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☐ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☐ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Ephemeral stream above wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☒ Ephemeral ☐ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

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DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/17/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, L. Winne**_____

Landform (hillslope, terrace, etc.): _____**Floodplain**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**0-2**_____

Lat: ____**37.39969604**_____ Long: _____**-76.83592309**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream. **Stream bed present:** ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	**Stream Identified:** ☒ **Yes** ☐ **No**

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:** ☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?** **Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☒ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☒ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☒ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☒ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☒ Evidence of thalweg
- ☐ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☒ Mudcracks (found within an unvegetated flow path/channel)
- ☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☐ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☒ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☒ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Perennial stream within floodplain. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☐ Intermittent ☒ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

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DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/17/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, L. Winne**_____

Landform (hillslope, terrace, etc.): _____**Floodplain**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**5-7**_____

Lat: ____**37.40124759**_____ Long: _____**-76.83801958**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream. **Stream bed present:** ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	**Stream Identified:** ☒ **Yes** ☐ **No**

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:** ☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?** **Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☐ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☐ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☐ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☐ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☐ Evidence of thalweg
- ☐ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☐ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☐ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☐ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Ephemeral stream above wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☒ Ephemeral ☐ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/17/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, L. Winne**_____

Landform (hillslope, terrace, etc.): _____**Floodplain**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**5-7**_____

Lat: ____**37.40130067**_____ Long: _____**-76.83794626**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream.	**Stream Identified: ☒ Yes ☐ No**
Stream bed present: ☒ Yes ☐ No **Stream bank present: ☒ Yes ☐ No** **OHWM present: ☒ Yes ☐ No**	

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?**
☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	**Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☐ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☐ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☐ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☐ Evidence of thalweg
- ☐ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☐ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☐ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☐ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Ephemeral stream above wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☒ Ephemeral ☐ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

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DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/17/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, L. Winne**_____

Landform (hillslope, terrace, etc.): _____**Drainage pattern**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**5-7**_____

Lat: ____**37.40107193**_____ Long: _____**-76.83801935**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream.	**Stream Identified:** ☒ **Yes** ☐ **No**
Stream bed present: ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?**
☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	**Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☐ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☐ Continuous bed and bank
- ☒ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☒ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☒ Evidence of thalweg
- ☐ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☐ Vegetation absent (channel bed)
- ☒ Vegetation matted down or bent (channel bed or bars)
- ☒ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☒ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Intermittent stream within wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/22/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, B. Haywood**_____

Landform (hillslope, terrace, etc.): _____**Drainage pattern**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**3-5**_____

Lat: ____**37.40224607**_____ Long: _____**-76.84534697**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream.	**Stream Identified: ☒ Yes ☐ No**
Stream bed present: ☒ Yes ☐ No **Stream bank present: ☒ Yes ☐ No** **OHWM present: ☒ Yes ☐ No**	

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:**		Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?**
☐ Gage data	☒ LIDAR	
☐ Regional Curve Data	☒ Soil Survey	**Normal conditions.**
☐ Climatic data	☒ Topographic Maps	
☒ Aerial photos	☒ Other **(NWI, NHD)**	

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☒ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☒ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☐ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☒ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☒ Evidence of thalweg
- ☐ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☒ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☐ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☒ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☐ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☒ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Intermittent stream within wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

SF-11

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/22/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, B. Haywood**_____

Landform (hillslope, terrace, etc.): _____**Drainage pattern**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**3-5**_____

Lat: ____**37.40297016**_____ Long: _____**-76.84558217**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream.	**Stream Identified:** ☒ **Yes** ☐ **No**
Stream bed present: ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?**
☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	**Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☒ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☒ Continuous bed and bank
- ☒ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☒ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☒ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☐ Evidence of thalweg
- ☐ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☐ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☒ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Intermittent stream within wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/22/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, B. Haywood**_____

Landform (hillslope, terrace, etc.): _____**Drainage pattern**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**3-5**_____

Lat: ____**37.40123738**_____ Long: _____**-76.84402968**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream. **Stream bed present:** ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	**Stream Identified:** ☒ **Yes** ☐ **No**

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:** ☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?** **Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☒ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☒ Continuous bed and bank
- ☒ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☒ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☐ Evidence of thalweg
- ☐ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☒ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☐ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☐ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Intermittent stream within wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/22/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**B. Runnion, B. Haywood**_____

Landform (hillslope, terrace, etc.): _____**Drainage pattern**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**2**_____

Lat: ____**37.40378449**_____ Long: _____**-76.84190918**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream. **Stream bed present:** ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	**Stream Identified:** ☒ **Yes** ☐ **No**

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:** ☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?** **Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☒ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☒ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☒ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☐ Evidence of thalweg
- ☐ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☒ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☒ Wracking/presence of organic litter (along channel banks or floodplain)
- ☐ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☒ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Intermittent stream within wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/22/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**D. Bertka, J. Sanne**_____

Landform (hillslope, terrace, etc.): _____**Valley**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**0-2**_____

Lat: ____**37.40226388**_____ Long: _____**-76.84164832**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream. **Stream bed present:** ☒ **Yes** ☐ **No** **Stream bank present:** ☒ **Yes** ☐ **No** **OHWM present:** ☒ **Yes** ☐ **No**	**Stream Identified:** ☒ **Yes** ☐ **No**

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:** ☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?** **Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☒ Natural line impressed on bank (above or below bankfull)
- ☒ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☐ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☐ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☒ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☒ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☒ Evidence of thalweg
- ☒ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☐ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☒ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☐ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☒ Wracking/presence of organic litter (along channel banks or floodplain)
- ☒ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☒ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

Describe rational for location of stream and provide supporting evidence for stream identification:

Intermittent stream within wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

DEQ Stream Identification Field Data Form

Project/Site: ___**Hedera Solar**___ City/County: ___**James City County**___ Date: ___**04/22/2024**___

Applicant/Owner: _____**Hexagon Development, LLC**_____

Investigator(s): _____**D. Bertka, J. Sanne**_____

Landform (hillslope, terrace, etc.): _____**Valley**_____

Local relief (concave, convex, none): _____**Concave**_____ Slope (%): _____**0-2**_____

Lat: ____**37.40354573**_____ Long: _____**-76.84614058**_____ Datum: _____**NAD83**_____

SUMMARY OF FINDINGS – Attach site map showing sampling point locations within and upstream of the head of the stream.	**Stream Identified:** ☒ **Yes** ☐ **No**
Stream bed present: ☒ **Yes** ☐ **No** **Stream bank present:** ☐ **Yes** ☒ **No** **OHWM present:** ☒ **Yes** ☐ **No**	

Site overview from remote and online resources. **Check boxes for online resources used to evaluate site:**	Describe land use and flow regime conditions from online resources. **Were there any recent extreme events (flooding or drought)?**
☐ Gage data ☒ LIDAR ☐ Regional Curve Data ☒ Soil Survey ☐ Climatic data ☒ Topographic Maps ☒ Aerial photos ☒ Other **(NWI, NHD)**	**Normal conditions.**

Check the boxes next to the field indicators used in stream determination:

Geomorphic Indicators:

☒ **Channel Bank Features**

- ☐ Natural line impressed on bank (above or below bankfull)
- ☐ Undercut bank
- ☒ Break in slope (on bank or at valley bottom)
- ☐ Continuous bed and bank
- ☐ Shelving (Top of bank, natural levee, or other)
- ☒ Clear bankfull storm event indicators present

☐ **Channel Bars**

- ☐ Shelving (on bar)
- ☐ Unvegetated (on bar)
- ☐ Vegetation transition (on bar)
- ☐ Sediment transition or sorting (on bar)
- ☐ Upper limit of deposition (on bar)

☒ **Channel Bed / Bedload Transport Evidence**

- ☐ Depositional (deposited sediment, lateral bars, mid channel bars, etc.)
- ☐ Bedform features (riffle, pool, steps, etc.)
- ☐ Erosional (scour, smoothing, etc.)
- ☐ Secondary channel (lateral or parallel along the same valley or floodplain)
- ☐ Evidence of thalweg
- ☒ Headcuts (with other evidence)
- ☒ Hydric soil development (changes in the character of soil)
- ☐ Mudcracks (found within an unvegetated flow path/channel)
- ☒ Changes in particle-size distribution (sediment sorting)

Vegetation Indicators:

☒ **Change in Vegetation Type / Density**

- ☒ Vegetation absent (channel bed)
- ☐ Vegetation matted down or bent (channel bed or bars)
- ☒ Exposed roots below intact soil layer (channel banks)
- ☐ Destruction of terrestrial vegetation (channel banks, top of bank, etc.)
- ☒ Change in plant community (transition from channel bed to floodplain)

Ancillary Indicators:

- ☒ Wracking/presence of organic litter (along channel banks or floodplain)
- ☒ Presence of obstacle marks (i.e. erosion/sedimentation around large obstacles in flow path)
- ☒ Leaf litter disturbed or absent
- ☐ Water staining
- ☐ Weathered clast or bedrock
- ☐ Deposited sediment within leaf pack (floodplain)

Other observed Indicators and/or additional observations?

OHWM approx. 2-3in

Describe rational for location of stream and provide supporting evidence for stream identification:

Ephemeral stream above wetland. Identified using LiDAR, topographic maps, aerial imagery, and NWI/NHD data. Classified using James City County Perennial Stream Protocol (05/15/09).

Chesapeake Bay Preservation Act Flow Regime Determination (if applicable):

Site within CBPA locality? ☒ Yes ☐ No

If Yes, which flow regime determination was used:

☐ NC DWQ ☐ Fairfax ☒ James City County

Flow Regime Determination Results: ☐ Ephemeral ☒ Intermittent ☐ Perennial

Note: Please refer to the "USACE 2022 National OHWM Field Delineation Manual for Rivers and Streams: Interim Version" at http://dx.doi.org/10.21079/11681/46102 for detail on terminology.

Attachment H

Perenniality Field Forms

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/17/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, L. Winne**	Evaluation Point:		**SF-1**		
	Indicator Type				
A. Geomorphology (Subtotal = 7.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	**1**	2	3
2. Sinuosity	Secondary	0	0.5	**1**	1.5
3. In channel structure: riffle-pool sequence	Primary	0	1	**2**	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	**1**	2	3
6. Floodplain/in-channel bench	Secondary	0	0.5	**1**	1.5
7. Recent alluvial deposits *	Secondary	0	0.5	**1**	1.5
B. Hydrology (Subtotal = 3.5)					
8. Groundwater discharge	Secondary	0	0.5	**1**	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	1	**0.5**	0
10. Flowing water in channel	Primary	0	1	**2**	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 1)					
12. Macrobenthos	Primary	0	**1**	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of an upstream stormwater discharge into the reach					
Total Points		**0**	**3.5**	**8.5**	**0**
Is the Stream Perennial? **YES** **NO**					
Reason:	**12 total points, no upslope spring or stream channel, stronger indicators are primarily secondary**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/17/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, L. Winne**	Evaluation Point:		**SF-2**		
	Indicator Type				
A. Geomorphology (Subtotal = 5.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	**1**	2	3
2. Sinuosity	Secondary	0	0.5	**1**	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	**1**	2	3
6. Floodplain/in-channel bench	Secondary	0	**0.5**	1	1.5
7. Recent alluvial deposits *	Secondary	0	**0.5**	1	1.5
B. Hydrology (Subtotal = 2.5)					
8. Groundwater discharge	Secondary	0	0.5	**1**	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	1	**0.5**	0
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 0)					
12. Macrobenthos	Primary	**0**	1	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of					
an upstream stormwater discharge into the reach					
Total Points		**0**	**5.5**	**2.5**	**0**
Is the Stream Perennial? **YES** **NO**					
Reason:	**8 total points, no upslope spring or stream channel, weak indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/17/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, L. Winne**	Evaluation Point:		**SF-3**		
	Indicator Type				
A. Geomorphology (Subtotal = 5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	**1**	2	3
2. Sinuosity	Secondary	0	**0.5**	1	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	**1**	2	3
6. Floodplain/in-channel bench	Secondary	0	**0.5**	1	1.5
7. Recent alluvial deposits *	Secondary	0	**0.5**	1	1.5
B. Hydrology (Subtotal = 2)					
8. Groundwater discharge	Secondary	0	0.5	**1**	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	1	0.5	**0**
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 0)					
12. Macrobenthos	Primary	**0**	1	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of an upstream stormwater discharge into the reach					
Total Points		**0**	**6**	**1**	**0**
Is the Stream Perennial? **YES NO**					
Reason:	**7 total points, no upslope spring or stream channel, weak indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/17/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, L. Winne**	Evaluation Point:		**SF-4**		
	Indicator Type				
A. Geomorphology (Subtotal = 5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	**1**	2	3
2. Sinuosity	Secondary	0	**0.5**	1	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	**1**	2	3
6. Floodplain/in-channel bench	Secondary	0	**0.5**	1	1.5
7. Recent alluvial deposits *	Secondary	0	**0.5**	1	1.5
B. Hydrology (Subtotal = 1.5)					
8. Groundwater discharge	Secondary	0	**0.5**	1	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	1	0.5	**0**
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 0)					
12. Macrobenthos	Primary	**0**	1	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of					
an upstream stormwater discharge into the reach					
Total Points		**0**	**6.5**	**0**	**0**
Is the Stream Perennial? **YES NO**					
Reason:	**6.5 total points, no upslope spring or stream channel, weak indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/17/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, L. Winne**	Evaluation Point:		**SF-5**		
	Indicator Type				
A. Geomorphology (Subtotal = 5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	**1**	2	3
2. Sinuosity	Secondary	0	**0.5**	1	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	**1**	2	3
6. Floodplain/in-channel bench	Secondary	0	**0.5**	1	1.5
7. Recent alluvial deposits *	Secondary	0	**0.5**	1	1.5
B. Hydrology (Subtotal = 1.5)					
8. Groundwater discharge	Secondary	0	**0.5**	1	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	1	0.5	**0**
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 0)					
12. Macrobenthos	Primary	**0**	1	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of					
an upstream stormwater discharge into the reach					
Total Points		**0**	**6.5**	**0**	**0**
Is the Stream Perennial? **YES** **NO**					
Reason:	**6.5 total points, no upslope spring or stream channel, weak indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/17/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, L. Winne**	Evaluation Point:		**SF-6**		
	Indicator Type				
A. Geomorphology (Subtotal = 12)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	1	2	**3**
2. Sinuosity	Secondary	0	0.5	1	**1.5**
3. In channel structure: riffle-pool sequence	Primary	0	1	**2**	3
4. Soil texture/depth of channel downcutting *	Secondary	0	0.5	**1**	1.5
5. Degree of valley development	Primary	0	1	**2**	3
6. Floodplain/in-channel bench	Secondary	0	0.5	1	**1.5**
7. Recent alluvial deposits *	Secondary	0	0.5	**1**	1.5
B. Hydrology (Subtotal = 4.5)					
8. Groundwater discharge	Secondary	0	0.5	1	**1.5**
9. Leaf litter (inverse relationship)	Secondary	1.5	**1**	0.5	0
10. Flowing water in channel	Primary	0	1	**2**	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 4)					
12. Macrobenthos	Primary	0	1	**2**	3
13. Gilled amphibians	Secondary	0	0.5	**1**	1.5
14. Fish	Secondary	0	0.5	**1**	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of an upstream stormwater discharge into the reach					
Total Points		**0**	**1**	**12**	**7.5**
Is the Stream Perennial? **YES** **NO**					
Reason:	**20.5 total points, upslope stream channels and wetlands, strong indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/17/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, L. Winne**	Evaluation Point:		**SF-7**		
	Indicator Type				
A. Geomorphology (Subtotal = 4.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	**1**	2	3
2. Sinuosity	Secondary	0	**0.5**	1	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	**1**	2	3
6. Floodplain/in-channel bench	Secondary	0	**0.5**	1	1.5
7. Recent alluvial deposits *	Secondary	**0**	0.5	1	1.5
B. Hydrology (Subtotal = 1.5)					
8. Groundwater discharge	Secondary	0	**0.5**	1	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	1	0.5	**0**
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 0)					
12. Macrobenthos	Primary	**0**	1	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of					
an upstream stormwater discharge into the reach					
Total Points		**0**	**6**	**0**	**0**
Is the Stream Perennial? **YES** **NO**					
Reason:	**6 total points, no upslope spring or stream channel, weak indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/17/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, L. Winne**	Evaluation Point:		**SF-8**		
	Indicator Type				
A. Geomorphology (Subtotal = 5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	**1**	2	3
2. Sinuosity	Secondary	0	**0.5**	1	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	**1**	2	3
6. Floodplain/in-channel bench	Secondary	0	**0.5**	1	1.5
7. Recent alluvial deposits *	Secondary	0	**0.5**	1	1.5
B. Hydrology (Subtotal = 2)					
8. Groundwater discharge	Secondary	0	**0.5**	**1**	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	1	0.5	**0**
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 0)					
12. Macrobenthos	Primary	**0**	1	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of					
an upstream stormwater discharge into the reach					
Total Points		**0**	**6**	**1**	**0**
Is the Stream Perennial? **YES NO**					
Reason:	**6 total points, no upslope spring or stream channel, weak indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/17/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, L. Winne**	Evaluation Point:		**SF-9**		
	Indicator Type				
A. Geomorphology (Subtotal = 7.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	1	**2**	3
2. Sinuosity	Secondary	0	0.5	**1**	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	1	**2**	3
6. Floodplain/in-channel bench	Secondary	0	**0.5**	1	1.5
7. Recent alluvial deposits *	Secondary	0	**0.5**	1	1.5
B. Hydrology (Subtotal = 3)					
8. Groundwater discharge	Secondary	0	0.5	**1**	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	**1**	0.5	0
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 1)					
12. Macrobenthos	Primary	0	**1**	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of an upstream stormwater discharge into the reach					
Total Points		**0**	**5.5**	**6**	**0**
Is the Stream Perennial? **YES** **NO**					
Reason:	**11.5 total points, upslope ephemeral channels, weak to moderate indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/22/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, B. Haywood**	Evaluation Point:		**SF-10**		
	Indicator Type				
A. Geomorphology (Subtotal = 7.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	1	**2**	3
2. Sinuosity	Secondary	0	**0.5**	1	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	1	2	**3**
6. Floodplain/in-channel bench	Secondary	0	**0.5**	1	1.5
7. Recent alluvial deposits *	Secondary	**0**	0.5	1	1.5
B. Hydrology (Subtotal = 2)					
8. Groundwater discharge	Secondary	0	**0.5**	1	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	1	**0.5**	0
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 1)					
12. Macrobenthos	Primary	0	**1**	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of an upstream stormwater discharge into the reach					
Total Points		**0**	**5**	**2.5**	**3**
Is the Stream Perennial? **YES** **NO**					
Reason:	**10.5 total points, no upslope stream channels, moderate indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/22/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, B. Haywood**	Evaluation Point:		**SF-11**		
	Indicator Type				
A. Geomorphology (Subtotal = 6.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	**1**	2	3
2. Sinuosity	Secondary	0	**0.5**	1	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	1	**2**	3
6. Floodplain/in-channel bench	Secondary	0	0.5	**1**	1.5
7. Recent alluvial deposits *	Secondary	0	**0.5**	1	1.5
B. Hydrology (Subtotal = 2)					
8. Groundwater discharge	Secondary	0	**0.5**	1	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	1	**0.5**	0
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 1)					
12. Macrobenthos	Primary	0	**1**	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of an upstream stormwater discharge into the reach					
Total Points		**0**	**6**	**3.5**	**0**
Is the Stream Perennial? **YES** **NO**					
Reason:	**9.5 total points, no upslope stream channels, mix of weak to moderate indicators**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/22/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, B. Haywood**	Evaluation Point:		**SF-12**		
	Indicator Type				
A. Geomorphology (Subtotal = 7.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	1	**2**	3
2. Sinuosity	Secondary	0	0.5	**1**	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	0.5	**1**	1.5
5. Degree of valley development	Primary	0	1	**2**	3
6. Floodplain/in-channel bench	Secondary	0	**0.5**	1	1.5
7. Recent alluvial deposits *	Secondary	**0**	0.5	1	1.5
B. Hydrology (Subtotal = 3)					
8. Groundwater discharge	Secondary	0	0.5	**1**	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	**1**	0.5	0
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 1)					
12. Macrobenthos	Primary	0	**1**	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of an upstream stormwater discharge into the reach					
Total Points		**0**	**4.5**	**7**	**0**
Is the Stream Perennial? **YES** **NO**					
Reason:	**11.5 total points, no upslope stream channels, mix of weak to moderate indicators**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/22/2024**	Project:		**Hedera Solar**		
Evaluator: **B. Runnion, B. Haywood**	Evaluation Point:		**SF-13**		
	Indicator Type				
A. Geomorphology (Subtotal = 6.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	1	**2**	3
2. Sinuosity	Secondary	0	0.5	**1**	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	0	**0.5**	1	1.5
5. Degree of valley development	Primary	0	**1**	2	3
6. Floodplain/in-channel bench	Secondary	0	0.5	**1**	1.5
7. Recent alluvial deposits *	Secondary	**0**	0.5	1	1.5
B. Hydrology (Subtotal = 2.5)					
8. Groundwater discharge	Secondary	0	**0.5**	1	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	**1**	0.5	0
10. Flowing water in channel	Primary	0	**1**	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 1)					
12. Macrobenthos	Primary	0	**1**	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of an upstream stormwater discharge into the reach					
Total Points		**0**	**6**	**4**	**0**
Is the Stream Perennial? **YES** **NO**					
Reason:	**10 total points, no upslope stream channels, mix of weak to moderate indicators**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

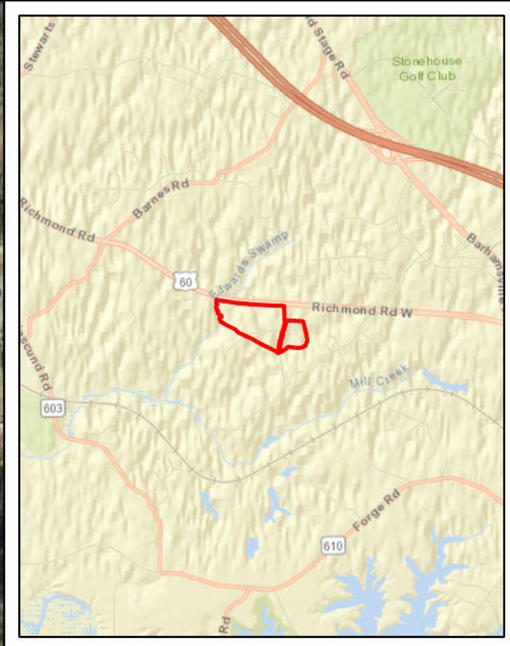
James City County Perennial Stream Protocol (5/15/09)					
Date: **04/22/2024**	Project:		**Hedera Solar**		
Evaluator: **D. Bertka, J. Sanne**	Evaluation Point:		**SF-14**		
	Indicator Type				
A. Geomorphology (Subtotal = 4.5)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	**1**	2	3
2. Sinuosity	Secondary	0	**0.5**	1	1.5
3. In channel structure: riffle-pool sequence	Primary	0	**1**	2	3
4. Soil texture/depth of channel downcutting *	Secondary	**0**	0.5	1	1.5
5. Degree of valley development	Primary	0	**1**	2	3
6. Floodplain/in-channel bench	Secondary	0	**0.5**	1	1.5
7. Recent alluvial deposits *	Secondary	0	**0.5**	1	1.5
B. Hydrology (Subtotal = 5)					
8. Groundwater discharge	Secondary	0	0.5	**1**	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	**1**	0.5	0
10. Flowing water in channel	Primary	0	1	2	**3**
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 1)					
12. Macrobenthos	Primary	0	**1**	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of an upstream stormwater discharge into the reach					
Total Points		**0**	**6.5**	**1**	**3**
Is the Stream Perennial? **YES** **NO**					
Reason:	**10.5 total points, no upslope stream channels, mix of weak to moderate indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

James City County Perennial Stream Protocol (5/15/09)					
Date: **04/22/2024**	Project:		**Hedera Solar**		
Evaluator: **D. Bertka, J. Sanne**	Evaluation Point:		**SF-15**		
	Indicator Type				
A. Geomorphology (Subtotal = 3)		Absent	Weak	Moderate	Strong
1. Continuous bed and bank *	Primary	0	**1**	2	3
2. Sinuosity	Secondary	0	**0.5**	1	1.5
3. In channel structure: riffle-pool sequence	Primary	**0**	1	2	3
4. Soil texture/depth of channel downcutting *	Secondary	**0**	0.5	1	1.5
5. Degree of valley development	Primary	0	**1**	2	3
6. Floodplain/in-channel bench	Secondary	**0**	0.5	1	1.5
7. Recent alluvial deposits *	Secondary	0	**0.5**	1	1.5
B. Hydrology (Subtotal = 0.5)					
8. Groundwater discharge	Secondary	**0**	0.5	1	1.5
9. Leaf litter (inverse relationship)	Secondary	1.5	1	**0.5**	0
10. Flowing water in channel	Primary	**0**	1	2	3
11. Yorktown Formation	Primary	**0**	1	2	3
C. Biology (Subtotal = 0)					
12. Macrobenthos	Primary	**0**	1	2	3
13. Gilled amphibians	Secondary	**0**	0.5	1	1.5
14. Fish	Secondary	**0**	0.5	1	1.5
* This metric must be evaluated with consideration of upstream conditions, primarily check for presence of an upstream stormwater discharge into the reach					
Total Points		**0**	**3**	**0.5**	**0**
Is the Stream Perennial? **YES** **NO**					
Reason:	**3.5 total points, no upslope stream channels, mix of abset to weak indicators overall**				
Additional Factors on which Determination is Based:					
Soil mottling					
Channel geometry, manmade modifications					
Offsite stormflow inputs					
Periphyton					
Grade control					
Primary Indicator is scored from 0 to 3 points, Secondary Indicator is scored from 0 to 1.5 points unless inverse relationship. If inverse relationship, Secondary Indicator is scored at 1.5 for absent down to 0 points for strong.					

Attachment I

RPA Figure





DELINEATION LIMITS
100 FT RPA BUFFER
STREAM POINTS
APPROXIMATE STREAM CENTERLINE
COWARDIN
R4SBC
R5UB
R6
WETLANDS & OTHER SURFACE WATERS
PEM
PFO
PSS
R5UB
R6
R4SBC

NOTES:
1. WETLAND/UPLAND BOUNDARY IS BASED ON GPS DATA. BOUNDARY/FLAGGING WAS NOT SURVEY LOCATED.
2. WETLAND DELINEATION IS PRELIMINARY & SUBJECT TO CONFIRMATION BY THE USACE.
3. 2021 VBMP AERIAL IMAGERY
4. 5 FT CONTOURS BASED ON LIDAR DATA (VIRGINIA LIDAR DATASET)
5. PERENNIAL STREAM DETERMINATION LIMITED TO ONSITE FEATURES
6. STREAM CL IS APPROXIMATE BASED ON FIELD DATA, AERIAL IMAGES, & LIDAR

0 300 600 FT

1 IN =300 FT

HEDERA SOLAR
JAMES CITY COUNTY, VIRGINIA

RESOURCE PROTECTION AREAS

Kimley»Horn

N

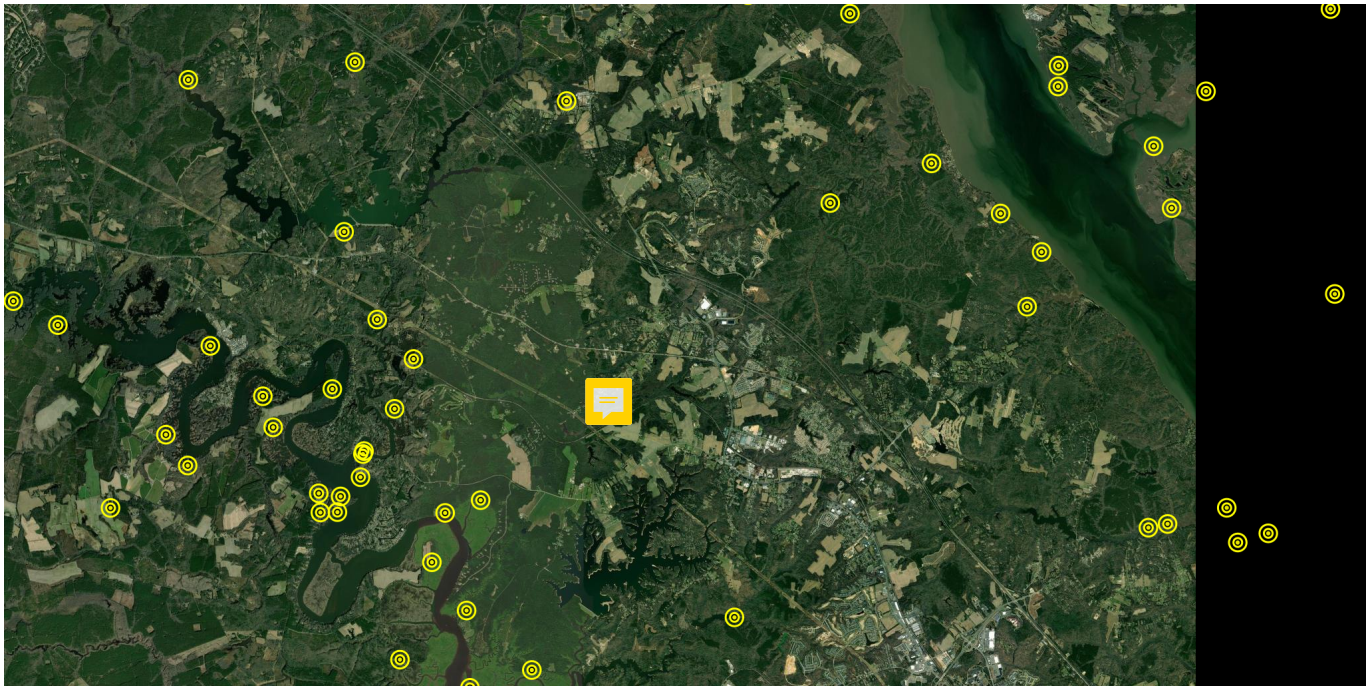
DATE:
05-17-2024

FIGURE:
1

APPENDIX D: THREATENED AND ENDANGERED SPECIES REPORTS

Enclosed.

CCB Mapping Portal



Layers: VA Eagle Nest Locator, VA Eagle Nest Buffers

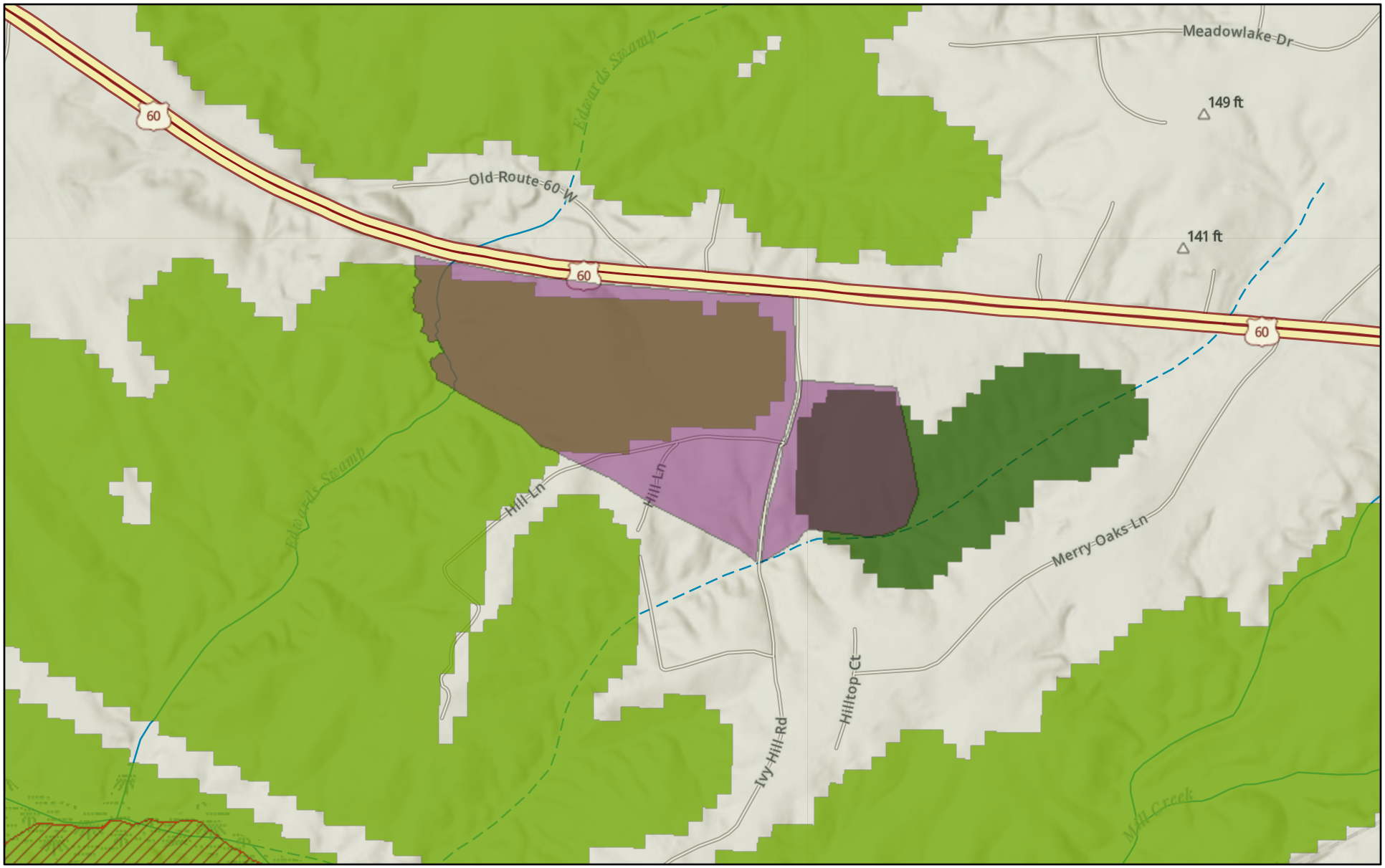
Map Center [longitude, latitude]: [-76.83734893798828, 37.399619108675594]

Map Link:
https://www.ccbbirds.org/maps/#layer=VA+Eagle+Nest+Locator&layer=VA+Eagle+Nest+Buffers&zoom=13&lat=37.399619108675594&lng=-76.83734893798828&base=World+Imagery+%28ESRI%29

Report Generated On: 01/30/2024

The Center for Conservation Biology (CCB) provides certain data online as a free service to the public and the regulatory sector. CCB encourages the use of its data sets in wildlife conservation and management applications. These data are protected by intellectual property laws. All users are reminded to view the Data Use Agreement to ensure compliance with our data use policies. For additional data access questions, view our Data Distribution Policy, or contact our Data Manager, Marie Pitts, at mlpitts@wm.edu or 757-221-7503.

DCR VANHDE MAP



January 30, 2024

1:14,595

0 0.1 0.2 0.4 mi

0 0.15 0.3 0.6 km

Adjacent States

Ecological Cores

C1: Outstanding

C2: Very High

C3: High

C4: Moderate

C5: General

Managed Conservation Lands

Designation

Coheld Easement

Conservation Easement

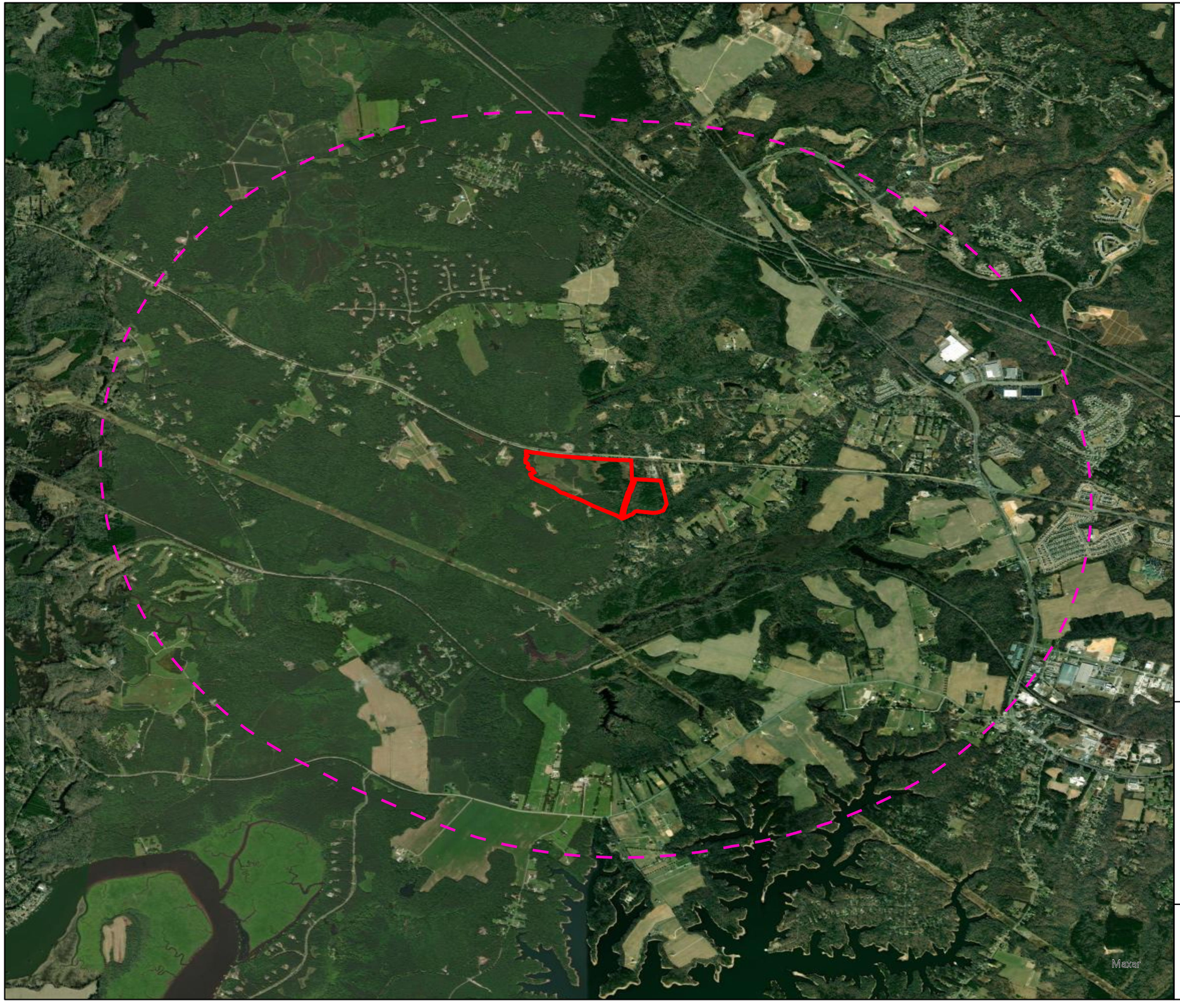
Federal Lands

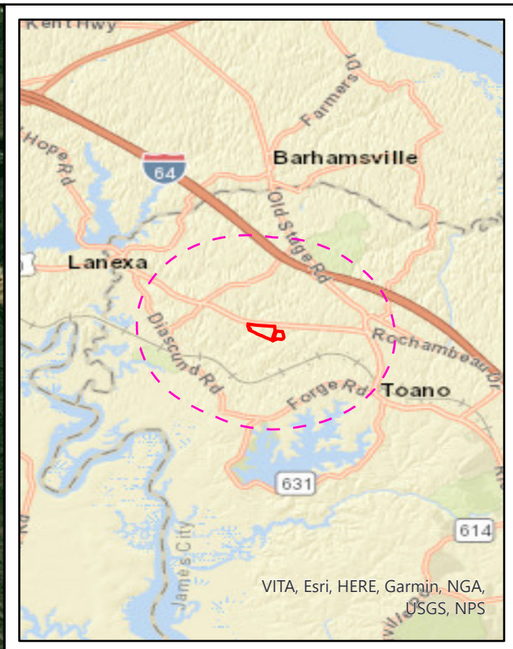
Local Lands

Non-Profit Lands

State Lands

Esri, NASA, NGA, USGS, FEMA, Sources: Esri, USGS, Esri Community Maps Contributors, VGIN, Esri, TomTom, Garmin, SafeGraph,





LEGEND

- STUDY AREA
- 2-MILE BUFFER

NOTES:
DWR WERMS DATA ACCESSED JANUARY 30, 2024. NO SPECIES IDENTIFIED WITHIN THE STUDY AREA OR 2-MILE BUFFER.

0 3,000 6,000 FT

1 IN =3,000 FT

HEDERA SOLAR
JAMES CITY COUNTY, VA

DWR WERMS DATA

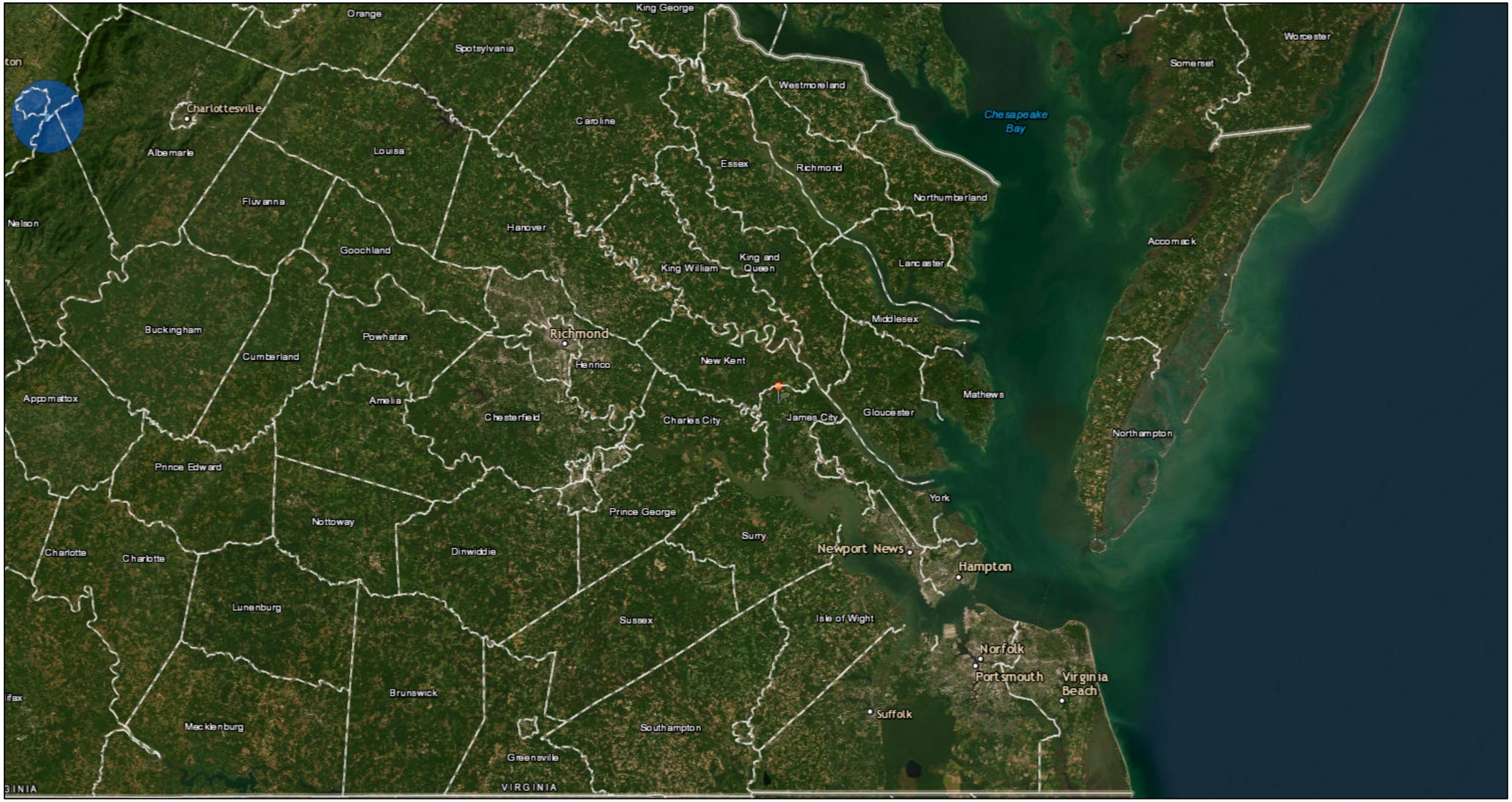
Kimley»Horn

N

DATE:
01-30-2024

FIGURE:
2

MYLU PESU HABITAT



1/29/2024, 4:18:37 PM

1:1,155,581

Tri-colored and Little Brown Hibernaculum Half Mile Buffer

Tri-colored and Little Brown Hibernaculum 5.5 Mile Buffer

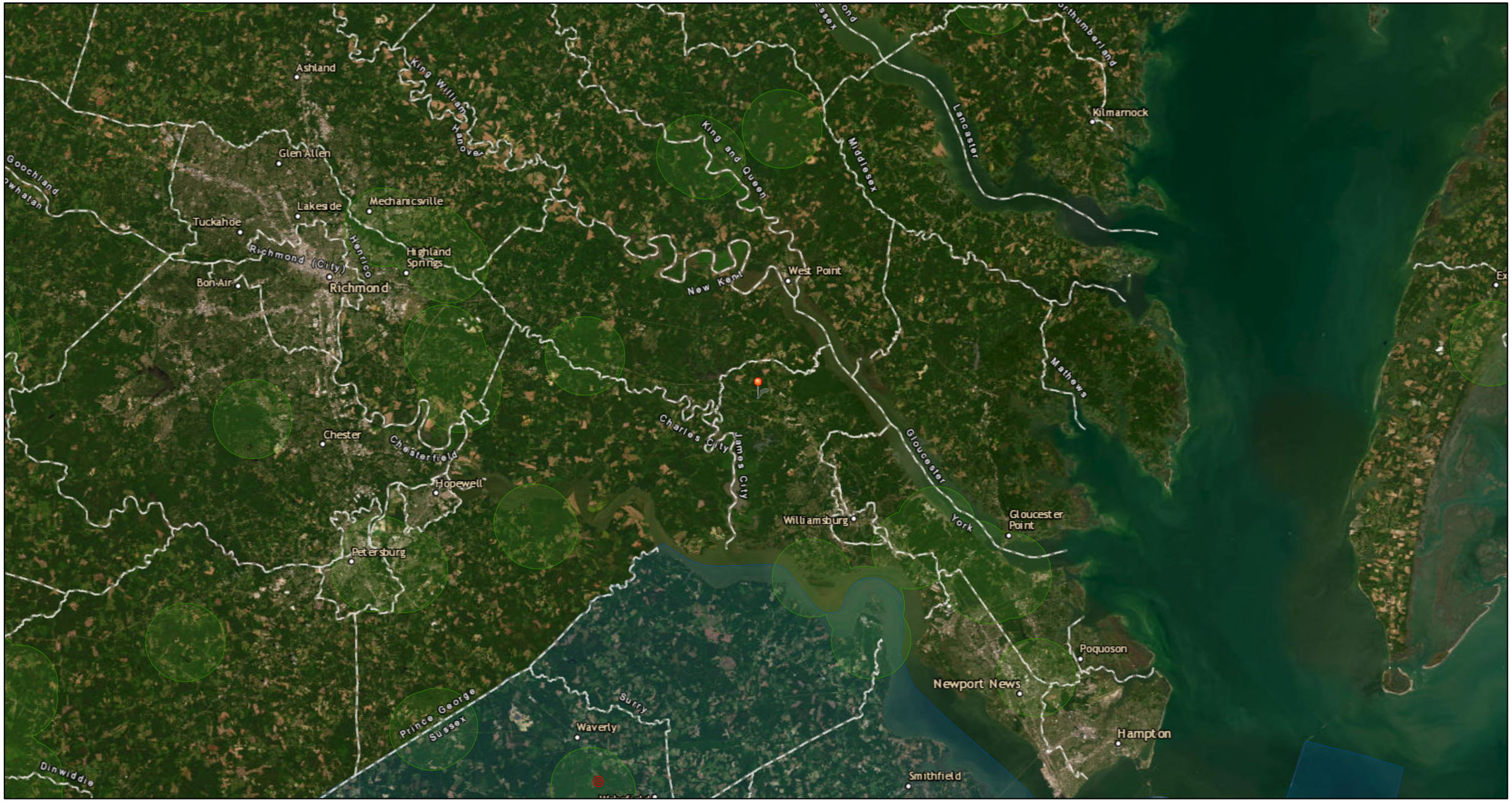
0 10 20 40 mi

0 15 30 60 km

Esri, HERE, Garmin, Earthstar Geographics

Dept. Game and Inland Fisheries
Earthstar Geographics | Esri, HERE, Garmin |

NLEB Locations and Roost Trees



1/29/2024, 4:15:41 PM

1:577,791

- NLEB Known Occupied Maternity Roost (Summer Habitat)
- NLEB Roost Tree 150-Foot Buffer
- NLEB Capture 3 Mile Buffer
- NLEB Year-Round Presence

0 5 10 20 mi

0 5 10 20 km

Esri, HERE, Garmin, Earthstar Geographics

VA Dept. Game & Inland Fisheries
Virginia Geographic Information Network (VGIN), and the Census and Localities and Towns submitting data to the project | Earthstar Geographics | Esri, HERE, Garmin |

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To:
Project code: 2024-0042398
Project Name: Hedera Solar

January 30, 2024

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

Subject: Technical assistance for 'Hedera Solar'

Dear Trevor Celata:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on January 30, 2024, for 'Hedera Solar' (here forward, Project). This project has been assigned Project Code 2024-0042398 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements are not complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat Rangewide Determination Key (Dkey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

Determination for the Northern Long-Eared Bat

Based upon your IPaC submission and a standing analysis, your project is not reasonably certain to cause incidental take of the northern long-eared bat. Unless the Service advises you within 15 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

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

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

- Monarch Butterfly *Danaus plexippus* Candidate
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

Next Step

Consultation with the Service is necessary. The project has a federal nexus (e.g., Federal funds, permit, etc.), but you are not the federal action agency or its designated (in writing) non-federal representative. Therefore, the ESA consultation status is incomplete and no project activities should occur until consultation between the Service and the Federal action agency (or designated non-federal representative), is completed.

As the federal agency or designated non-federal representative deems appropriate, they should submit their determination of effects to the Service by doing the following.

1. Log into IPaC using an agency email account and click on My Projects, click "Search by record locator" to find this Project using **550-137790834**. (Alternatively, the originator of the project in IPaC can add the agency representative to the project by using the Add Member button on the project home page.)
2. Review the answers to the Northern Long-eared Bat Range-wide Determination Key to ensure that they are accurate.
3. Click on Review/Finalize to convert the ‘not likely to adversely affect’ consistency letter to a concurrence letter. Download the concurrence letter for your files if needed.

You have indicated that you must remove a hazard tree in order to prevent imminent loss of human life. Be advised that the Act’s implementing regulations (50 CFR part 17) include a take exemption pursuant to the defense of human life (for endangered species, see 50 CFR 17.21(c)(2)): ‘‘any person may take endangered [or threatened] wildlife in defense of his own life or the lives of others.’’). The regulations at 50 CFR 17.21(c)(4) require that any person taking, including killing, listed wildlife in defense of human life under this exception must notify our headquarters Office of Law Enforcement, at the address provided at 50 CFR 2.1(b), in writing, within 5 days. In addition, section 11 of the Act enumerates the penalties and enforcement of the Act. In regard to civil penalties, section 11(a)(3) of the Act states, ‘‘Notwithstanding any other provision of this [Act], no civil penalty shall be imposed if it can be shown by a preponderance of the evidence that the defendant committed an act based on a good faith belief that he was acting to protect himself or herself, a member of his or her family, or any other individual from bodily harm, from any endangered or threatened species’’ (16 U.S.C. 1540(a)(3)). Section 11(b)

(3) of the Act contains similar language in regard to criminal violations (see 16 U.S.C. 1540(b)(3)). If you think incidental take of listed bats was reasonably certain to have occurred as a result of your hazard tree removal, we advise you to contact the Office of Law Enforcement as outlined above. In the future, we recommend planning ahead so that tree removal of potentially hazardous trees does not become an emergency. If you determine an emergency exists, however, and human life is in imminent danger, do not delay action. Also do not delay action if removal of the hazard tree is part of a federal response to a situation involving an act of God, disaster, casualty, national defense or security emergency, etc. - coordinate with the local USFWS field office as soon as practicable after the emergency is under control.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the Virginia Ecological Services Field Office and reference Project Code 2024-0042398 associated with this Project.

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

1. Name

Hedera Solar

2. Description

The following description was provided for the project 'Hedera Solar':

> The proposed project is a ground-mounted solar photovoltaic installation within the jurisdiction of James City County, Virginia.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.4016446,-76.8422816306474,14z



DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for the Endangered northern long-eared bat (*Myotis septentrionalis*).

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

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

   No

2. The action area does not overlap with an area for which U.S. Fish and Wildlife Service currently has data to support the presumption that the northern long-eared bat is present. Are you aware of other data that indicates that northern long-eared bats (NLEB) are likely to be present in the action area?

   Bat occurrence data may include identification of NLEBs in hibernacula, capture of NLEBs, tracking of NLEBs to roost trees, or confirmed NLEB acoustic detections. Data on captures, roost tree use, and acoustic detections should post-date the year when white-nose syndrome was detected in the relevant state. With this question, we are looking for data that, for some reason, may have not yet been made available to U.S. Fish and Wildlife Service.

   No

3. Does any component of the action involve construction or operation of wind turbines?

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

   No

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

   Yes

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

   No

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

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

   No

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

   No

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

   No

9. Have you determined that your proposed action will have no effect on the northern long-eared bat? Remember to consider the effects of any activities that would not occur but for the proposed action.

   If you think that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, answer “No” below and continue through the key. If you have determined that the northern long-eared bat does not occur in your project’s action area and/or that your project will have no effects whatsoever on the species despite the potential for it to occur in the action area, you may make a “no effect” determination for the northern long-eared bat.

   Note: Federal agencies (or their designated non-federal representatives) must consult with USFWS on federal agency actions that may affect listed species [50 CFR 402.14(a)]. Consultation is not required for actions that will not affect listed species or critical habitat. Therefore, this determination key will not provide a consistency or verification letter for actions that will not affect listed species. If you believe that the northern long-eared bat may be affected by your project or if you would like assistance in deciding, please answer “No” and continue through the key. Remember that this key addresses only effects to the northern long-eared bat. Consultation with USFWS would be required if your action may affect another listed species or critical habitat. The definition of Effects of the Action can be found here: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

   No

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

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

    Automatically answered
    No

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

    No

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

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats (i.e., live trees and/or snags ≥3 inches (12.7 centimeter) dbh), answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    Yes

13. Will the action cause effects to a bridge?

    No

14. Will the action result in effects to a culvert or tunnel?

    No

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

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

    No

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

    No

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

    Note: The answer may be yes when a publicly accessible road either (1) is constructed as part of the proposed action or (2) would not occur but for the proposed action (i.e., the road construction is facilitated by the proposed action but is not an explicit component of the project).

    No

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

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

    No

19. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

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

    No

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

    No

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

    No

22. Will the action include drilling or blasting?

    No

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

    No

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

    No

25. Will the action include or cause activities that are reasonably certain to cause chronic nighttime noise in suitable summer habitat for the northern long-eared bat? Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    No

26. Does the action include, or is it reasonably certain to cause, the use of artificial lighting within 1000 feet of suitable northern long-eared bat roosting habitat?

    Note: Additional information defining suitable roosting habitat for the northern long-eared bat can be found at: https://www.fws.gov/media/northern-long-eared-bat-assisted-determination-key-selected-definitions

    No

27. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    Yes

28. Has a presence/probable absence summer bat survey targeting the northern long-eared bat following the Service's Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines been conducted within the project area? If unsure, answer "No."

    No

29. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property and has a diameter breast height of six inches or greater.

    Yes

30. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    Yes

31. [Semantic] Does your project intersect a known sensitive area for the northern long-eared bat?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your state agency or USFWS field office

    Automatically answered
    No

32. Will all tree cutting/trimming or other knocking or bringing down of trees be restricted to the inactive season for the northern long-eared bat?

    Note: Inactive Season dates for summer habitat outside of staging and swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas.

    Yes

33. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 10 acres?

    Yes

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

100

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the inactive (hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

100

In what extent of the area (in acres) will trees be cut, knocked down, or trimmed during the active (non-hibernation) season for northern long-eared bat? **Note:** Inactive Season dates for spring staging/fall swarming areas can be found here: https://www.fws.gov/media/inactive-season-dates-swarming-and-staging-areas

0

Will all potential northern long-eared bat (NLEB) roost trees (trees ≥3 inches diameter at breast height, dbh) be cut, knocked, or brought down from any portion of the action area greater than or equal to 0.1 acre? If all NLEB roost trees will be removed from multiple areas, select 'Yes' if the cumulative extent of those areas meets or exceeds 0.1 acre.

Yes

Enter the extent of the action area (in acres) from which all potential NLEB roost trees will be removed. If all NLEB roost trees will be removed from multiple areas, entire the total extent of those areas. Round up to the nearest tenth of an acre.

100

For the area from which all potential northern long-eared bat (NLEB) roost trees will be removed, on how many acres (round to the nearest tenth of an acre) will trees be allowed to regrow? Enter '0' if the entire area from which all potential NLEB roost trees are removed will be developed or otherwise converted to non-forest for the foreseeable future.

0

Will any snags (standing dead trees) ≥3 inches dbh be left standing in the area(s) in which all northern long-eared bat roost trees will be cut, knocked down, or otherwise brought down?

Yes

Will all project activities by completed by April 1, 2024?

No

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Trevor Celata
Address: 2035 Maywill St
Address Line 2: Suite 200
City: Richmond
State: VA
Zip: 23230
Email trevor.celata@kimley-horn.com
Phone: 8046733882

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Virginia Ecological Services Field Office
6669 Short Lane
Gloucester, VA 23061-4410
Phone: (804) 693-6694 Fax: (804) 693-9032

In Reply Refer To:
Project Code: 2024-0042398
Project Name: Hedera Solar

January 30, 2024

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

To Whom It May Concern:

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

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

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

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

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

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

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

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

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

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

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

Attachment(s):

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

OFFICIAL SPECIES LIST

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

This species list is provided by:

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

PROJECT SUMMARY

Project Code: 2024-0042398
Project Name: Hedera Solar
Project Type: Power Gen - Solar
Project Description: The proposed project is a ground-mounted solar photovoltaic installation within the jurisdiction of James City County, Virginia.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.4016446,-76.8422816306474,14z



Counties: James City County, Virginia

ENDANGERED SPECIES ACT SPECIES

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

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

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

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

---

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

MAMMALS

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

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

CRITICAL HABITATS

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

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

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

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

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

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

---

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

There are bald and/or golden eagles in your project area.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

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

PROBABILITY OF PRESENCE SUMMARY

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

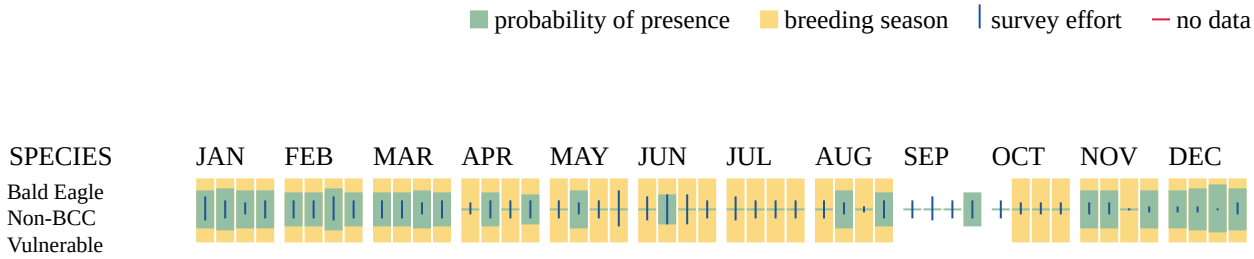
Probability of Presence (■)

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

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

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

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



Additional information can be found using the following links:

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

MIGRATORY BIRDS

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

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

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Oct 15 to Aug 31
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9454	Breeds May 20 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Kentucky Warbler *Oporornis formosus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9443	Breeds Apr 20 to Aug 20
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9513	Breeds May 1 to Jul 31
Prothonotary Warbler *Protonotaria citrea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9439	Breeds Apr 1 to Jul 31

NAME	BREEDING SEASON
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
Short-billed Dowitcher *Limnodromus griseus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9480	Breeds elsewhere
Wood Thrush *Hylocichla mustelina* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9431	Breeds May 10 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

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

Probability of Presence (■)

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

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

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

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

■ probability of presence ■ breeding season | survey effort – no data

SPECIES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC



Additional information can be found using the following links:

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

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Trevor Celata
Address: 2035 Maywill St
Address Line 2: Suite 200
City: Richmond
State: VA
Zip: 23230
Email trevor.celata@kimley-horn.com
Phone: 8046733882

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

VaFWIS Search Report Compiled on 1/29/2024, 4:35:35 PM

Help

Known or likely to occur within a **2 mile radius around point 37.4032340 -76.8417228** in **095 James City County, VA**

View Map of Site Location

470 Known or Likely Species ordered by Status Concern for Conservation (displaying first 25) (25 species with Status* or Tier I** or Tier II**)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
050022	FEST	Ia	Bat, northern long-eared	Myotis septentrionalis		BOVA
010032	FESE	Ib	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
040144	FTST	Ia	Knot, red	Calidris canutus rufa		HU6
040110	FTSE	Ia	Rail, eastern black	Laterallus jamaicensis jamaicensis		BOVA
050020	SE	Ia	Bat, little brown	Myotis lucifugus		BOVA
050034	SE	Ia	Bat, Rafinesque's eastern big-eared	Corynorhinus rafinesquii macrotis		HU6
050027	FPSE	Ia	Bat, tri-colored	Perimyotis subflavus		BOVA,HU6
040096	ST	Ia	Falcon, peregrine	Falco peregrinus		BOVA
040293	ST	Ia	Shrike, loggerhead	Lanius ludovicianus		BOVA
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Potential	BOVA,Habitat
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100079	FC	IIIa	Butterfly, monarch	Danaus plexippus		BOVA
030067	CC	IIa	Terrapin, northern diamond-backed	Malaclemys terrapin terrapin		BOVA,HU6
030063	CC	IIIa	Turtle, spotted	Clemmys guttata		BOVA,HU6
010077		Ia	Shiner, bridle	Notropis bifrenatus		BOVA
040052		IIa	Duck, American black	Anas rubripes		BOVA,HU6
040033		IIa	Egret, snowy	Egretta thula		BOVA
040029		IIa	Heron, little blue	Egretta caerulea caerulea		BOVA
040036		IIa	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040181		IIa	Tern, common	Sterna hirundo		BOVA,HU6
040320		IIa	Warbler, cerulean	Setophaga cerulea		BOVA,HU6
040140		IIa	Woodcock, American	Scolopax minor		BOVA,HU6
040203		IIb	Cuckoo, black-billed	Coccyzus erythropthalmus		BOVA
040105		IIb	Rail, king	Rallus elegans		BOVA,HU6
100003		IIc	Skipper, rare	Problema bulenta		HU6

To view **All 470 species** View 470

*FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; CC=Collection Concern

**I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need
Virginia Widlife Action Plan Conservation Opportunity Ranking:
a - On the ground management strategies/actions exist and can be feasibly implemented.;
b - On the ground actions or research needs have been identified but cannot feasibly be implemented at this time.;
c - No on the ground actions or research needs have been identified or all identified conservation opportunities have been exhausted.

View Map of All Query Results from All Observation Tables

Bat Colonies or Hibernacula: **Not Known**

Anadromous Fish Use Streams

N/A

Impediments to Fish Passage (3 records)

View Map of All Fish Impediments

ID	Name	River	View Map
415	PERRYS DAM (CROW DAM)	TR-MILL CREEK	Yes
408	TAYLOR PIT DAM	MILL CREEK	Yes
414	TOANO DAM	TR-MILL CREEK	Yes

Colonial Water Bird Survey

N/A

Threatened and Endangered Waters

N/A

Managed Trout Streams

N/A

Bald Eagle Concentration Areas and Roosts

N/A

Bald Eagle Nests (1 records)

View Map of All Query Results
Bald Eagle Nests

Nest	N Obs	Latest Date	DGIF Nest Status	View Map
JC8401	4	Jan 1 1987	HISTORIC	Yes

Displayed 1 Bald Eagle Nests

Species Observations (20 records)

View Map of All Query Results
Species Observations

obsID	class	Date Observed	Observer	N Species			View Map
				Different Species	Highest TE*	Highest Tier**	
635260	SppObs	Sep 30 2018	Lisa Reagan	1		IV	Yes
65156	SppObs	May 16 2000	JOSEPH C. MITCHELL (PRINCIPLE PERMITTEE), DEPT. BIOLOGY UNIV. RICHMOND	4		IV	Yes
65155	SppObs	May 16 2000	JOSEPH C. MITCHELL (PRINCIPLE PERMITTEE), DEPT. BIOLOGY UNIV. RICHMOND	4		IV	Yes
900190	SppObs	May 1 2018	Dane Conley	1			Yes
900189	SppObs	May 1 2018	Dane Conley	1			Yes
625078	SppObs	May 15 2013	Jenny ; Loveland	1			Yes
630050	SppObs	May 15 2013	Jenny ; Loveland	1			Yes
603353	SppObs	Jun 27 2008	Stephanie M; Day	1			Yes
320173	SppObs	Jun 18 2007	Stephanie Day	1			Yes
315994	SppObs	Jun 30 2006	George Mathews	1			Yes
315992	SppObs	May 24 2006	George Mathews	1			Yes
313447	SppObs	Jul 25 2005	George Mathews (principal permittee)/Kory Steele	1			Yes
303162	SppObs	Jun 6 2003	George Mathews (principal permittee)/Kory Steele	1			Yes
303155	SppObs	Jun 2 2003	George Mathews (principal permittee)/Kory Steele	1			Yes
339731	SppObs	Jul 25 1996	ADAMS, GONZALES	3			Yes

60694	SppObs	Oct 28 1961	RICE, L	1			Yes
28659	SppObs	Jan 1 1900	Mitchell, J. C.	1			Yes
365493	SppObs	Jan 1 1900		1			Yes
365389	SppObs	Jan 1 1900		1			Yes
17780	SppObs	Jan 1 1900		1			Yes

Displayed 20 Species Observations

Habitat Predicted for Aquatic WAP Tier I & II Species

N/A

Habitat Predicted for Terrestrial WAP Tier I & II Species

BOVA Code	Status*	Tier**	Common Name	Scientific Name	View Map
020044	ST	IIa	Salamander, Mabee's	Ambystoma mabeei	Yes

Virginia Breeding Bird Atlas Blocks (5 records)

View Map of All Query Results
Virginia Breeding Bird Atlas Blocks

BBA ID	Atlas Quadrangle Block Name	Breeding Bird Atlas Species			View Map
		Different Species	Highest TE*	Highest Tier**	
56071	Norge, NW	1			Yes
56083	Toano, CW	44		III	Yes
56086	Toano, SE	38		III	Yes
56085	Toano, SW	1			Yes
55086	Walkers, SE	34		IV	Yes

Public Holdings:

N/A

Summary of BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia:

FIPS Code	City and County Name	Different Species	Highest TE	Highest Tier
095	James City	420	FESE	I

USGS 7.5' Quadrangles:
Walkers
Norge
Toano

USGS NRCS Watersheds in Virginia:

N/A

USGS National 6th Order Watersheds Summary of Wildlife Action Plan Tier I, II, III, and IV Species:

HU6 Code	USGS 6th Order Hydrologic Unit	Different Species	Highest TE	Highest Tier
JL26	Diascund Creek-Diascund Creek Reservoir	63	SE	I
JL27	Diascund Creek-Mill Creek	69	SE	I
JL28	Chickahominy River-Yarmouth Creek	79	FTSE	I
YO62	Ware Creek	65	SE	I

Compiled on 1/29/2024, 4:35:35 PM I1711324.0 report=all searchType= R dist= 3218 poi= 37.4032340 -76.8417228

PixelSize=64; Anadromous=0.019834; BBA=0.032775; BECAR=0.017619; Bats=0.017077; Buffer=0.064328; County=0.052642; HU6=0.058043; Impediments=0.018997; Init=0.096333; PublicLands=0.024287; Quad=0.033558; SppObs=0.256947; TEWaters=0.020464; TierReaches=0.020639; TierTerrestrial=0.035116; Total=0.925467; Tracking_BOVA=0.166412; Trout=0.019844; huva=0.03147

Site Location

37,24,11.6 -76,50,30.2
is **the Search Point**

Show Position Rings
(•) Yes ( ) No
1 mile and 1/4 mile at the **Search Point**

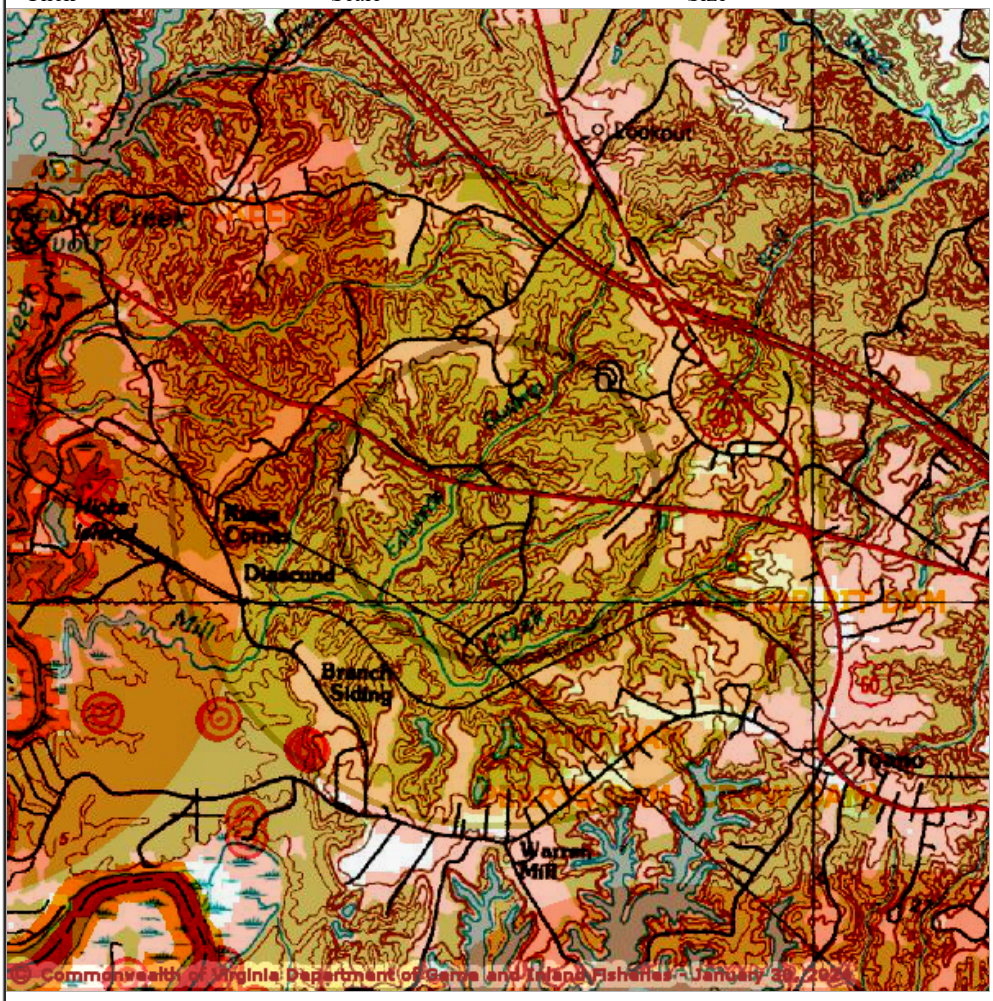
Show Search Area
(•) Yes ( ) No
2 Search distance miles radius

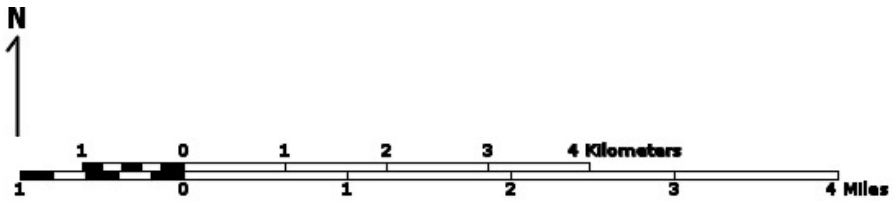
Search Point is at map center

Base Map Choices
Topography

Map Overlay Choices
Current List: Position, Search, BECAR, BAEANests, TEWaters, TierII, Habitat, Trout, Anadromous

Map Click 37,22,46.7 -76,49,08.6 Pan Id M
Map Scale In Zoom Out
Refresh Browser Page
Screen Size Small Size Big
Help





Point of Search 37,24,11.6 -76,50,30.2
Map Location 37,24,11.6 -76,50,30.2

Select **Coordinate System:**
(•) Degrees,Minutes,Seconds Latitude - Longitude
( ) Decimal Degrees Latitude - Longitude
( ) Meters UTM NAD83 East North Zone
( ) Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 332195 and top 4145998. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West. Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5

Map Overlay Legend

T & E Waters
- Federal
- State

Predicted Habitat WAP Tier I & II
- Aquatic
- Terrestrial

Trout Waters
- Class I - IV
- Class V - VI

Anadromous Fish Reach
- Confirmed
- Potential

23 Impediment

Position Rings 1 mile and 1/4 mile at the Search Point

2 mile radius Search Area

Bald Eagle Concentration Areas and Roosts

square miles.

Topographic maps and Black and white aerial photography for year 1990+-
are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic
http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Wildlife Resources.

map assembled 2024-01-30 16:07:07 (qa/qc March 21, 2016 12:20 - tn=1711709.0 dist=3218 I)
$poi=37.4032340 -76.8417226

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APPENDIX E: CULTURAL AND HISTORICAL RESOURCES REPORT

Enclosed.

June 4, 2024

Hedera Solar, LLC
Ester Rekhelman
321 East Main St., Suite 500
Charlottesville, VA 22902

Re: Cultural Resource Risk Assessment, Hedera Solar Site, James City County, Virginia. H&P Project #: 20240881.

Dear Ms. Rekhelman:

We are pleased to present this Cultural Resource Risk Assessment of the Hedera Solar Site. The conclusions in this letter are presented for planning purposes only and do not satisfy local, state and federal regulatory requirements.

The project was completed by or under the direct supervision of professional archaeologists and architectural historians who meet or exceed the qualifications contained in the Secretary of the Interior's Professional Qualifications Standards (48 *Federal Register* 44738-44739).

Site Overview

The proposed Hedera Solar Site lies approximately 3 miles northwest of the unincorporated community of Toano, Virginia and contains one parcel (Parcel ID 1110100012). It is accessed from the north by Richmond Road (Rte. 60) with Edwards Swamp to the west and woods to the east and south (Figure 1). The GPS coordinates for this area were provided by the client.

The proposed area of potential effects (APE) for archaeology, i.e., the area where ground disturbance may occur, is considered to be the entire 100-acre property. The APE for the architectural survey consists of this footprint and includes those parcels within 0.5 miles (0.8 km) of the project boundaries, considering the view shed as impacted by topography and the presence of other structures, specifically those parcels visible from the proposed solar farm and the vicinity where impacts to setting and feeling may occur.



Figure 1. Project area as depicted in 2021 (VGIN).

Environmental Setting

The parcel is cut into two sections by Rte. 657 in the eastern portion. Several dirt roads are located in the western portion, including Hill Lane which cuts through the parcel in the southern section to a residential development located outside the project parcel. Both the western and eastern sections of the parcel are heavily wooded and planted for silviculture. The parcel is relatively flat in the central region with intermittent streams cutting steeply sloped ridge fingers in the northwestern and southeastern regions (Figure 2 and Figure 3). Edwards Swamp makes up the western border of the project parcel and an unnamed tributary of Mill Creek makes up the southeastern border. Other sources of nearby freshwater include springs and additional tributaries of Mill Creek that surround the parcel. The gently sloped portions of the parcel and the presence of nearby fresh water would have been attractive to Native American groups. Swamps were also commonly utilized for resource extraction by Native American groups.

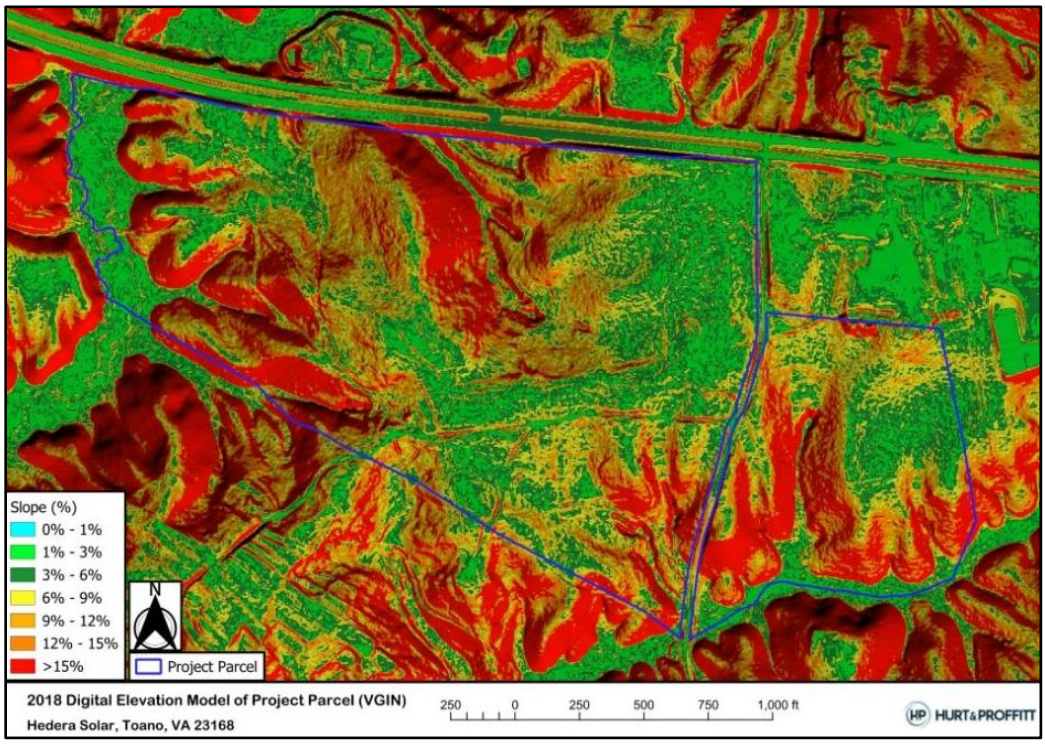


Figure 2. Slope percentage map of project parcel. Parcel in blue (2018).

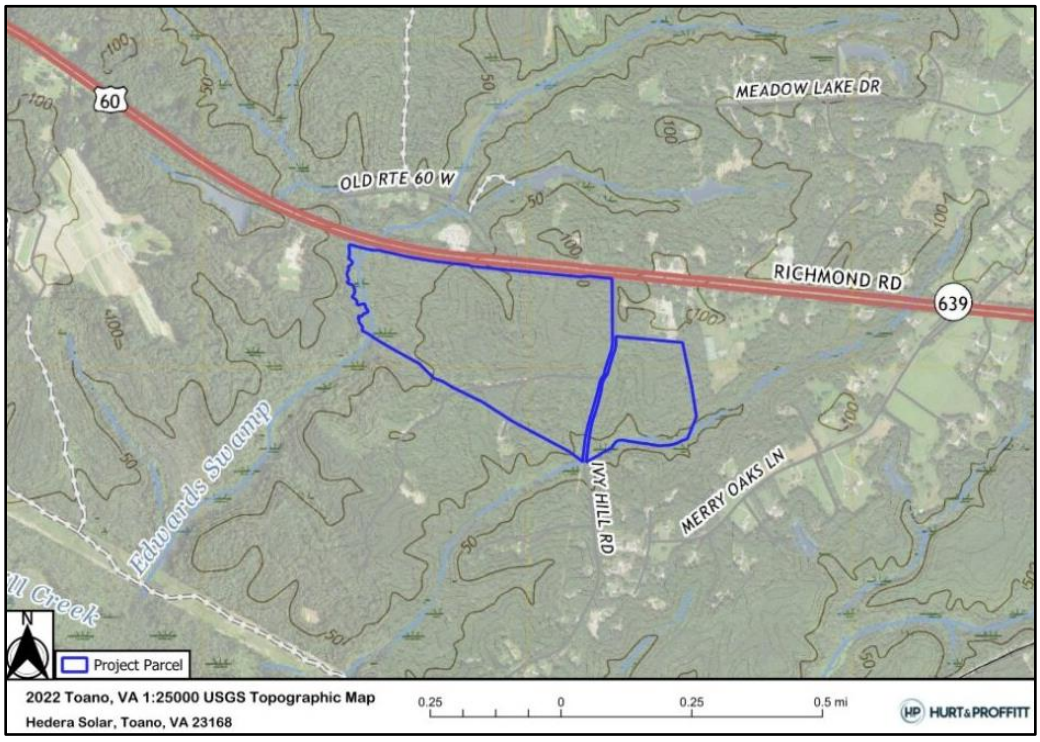


Figure 3. Project area depicted on 2022 Toano, VA 1:24000 USGS topographic map. Parcel in blue (USGS 2023).

The project area is in Virginia's Coastal Plain geologic province. The Coastal Plain is a narrow strip along Virginia's eastern edge stretching from the Fall Zone to the Atlantic Ocean. It is characterized by younger strata than the adjoining Piedmont province, cut by large tidal rivers that flow into the Chesapeake Bay. The parcel is located on the west end of the Virginia or Lower Peninsula between the James and York Rivers. The western border is bounded by Edwards Swamp.

The soils in the project area primarily consist of Craven-Uchee complex (6 to 10 percent slopes) and Emporia complex (15 to 25 percent slopes) (Figure 4 and Figure 5). Craven-Uchee complex is formed of marine deposits. This deep, moderately drained soil is considered farmland of statewide importance. This soil type covers approximately 33 percent of the project area and is located in the central and eastern portions of the property. Emporia complex is formed of marine deposits. This deep, well-drained soil is not considered prime farmland. This soil type covers approximately 33 percent of the project area and is located in the southern and western portions of the property. Other soils include Kempsville-Emporia fine sandy loams (2 to 6 percent slopes). This deep, well-drained soil is formed of marine deposits and is considered prime farmland. This soil type covers approximately 22 percent of the project area and is located in the southern portion of the property. Additional soil types include Slagle fine sandy loam (0 to 6 percent slopes), Johnston complex (0 to 2 percent slopes), and Uchee loamy fine sand (2 to 6 percent slopes). The central and southern portions of the APE would have been favorable for habitation and potential farmland.

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
11C	Craven-Uchee complex, 6 to 10 percent slopes	33.1	32.8%
15E	Emporia complex, 15 to 25 percent slopes	33.3	33.1%
17	Johnston complex	2.5	2.5%
19B	Kempsville-Emporia fine sandy loams, 2 to 6 percent slopes	21.8	21.6%
29A	Slagle fine sandy loam, 0 to 2 percent slopes	4.4	4.4%
29B	Slagle fine sandy loam, 2 to 6 percent slopes	2.6	2.5%
34B	Uchee loamy fine sand, 2 to 6 percent slopes	3.1	3.1%
Totals for Area of Interest		**100.7**	**100.0%**

Figure 4. Project area soil map unit legend (NRCS 2023).



Figure 5. Project area soil unit map (NRCS 2024).

Previously Recorded Cultural Resources

H&P reviewed the Virginia Department of Historic Resources' (VDHR) Virginia Cultural Resource Information System (V-CRIS) for previously recorded cultural resources and previously conducted Phase I Archaeological Surveys in the vicinity of the project.

A review of these resources within 0.5 miles of the project parcel boundaries revealed two previously recorded architectural resources, one previously recorded archaeological site, and one previously recorded archaeological Phase I survey (Figure 6, Table 1).

Architectural resource 047-0083 is a dwelling that was constructed in 1900 to the north of the project parcel. Architectural resource 047-5162 is a farmstead that was constructed in 1920 to the east of the project parcel. Neither of these resources have been evaluated for NRHP eligibility by DHR staff.

Archaeological site 44JC0391 is a Woodland Period lithic scatter to the north of the project parcel. It has not been evaluated for NRHP listing by DHR staff.

Phase I archaeological survey JC-406 was conducted by Circa in 2019 as part of the Cultural Resources Survey of Lifepointe Christian Church Tract, James City County, Virginia.

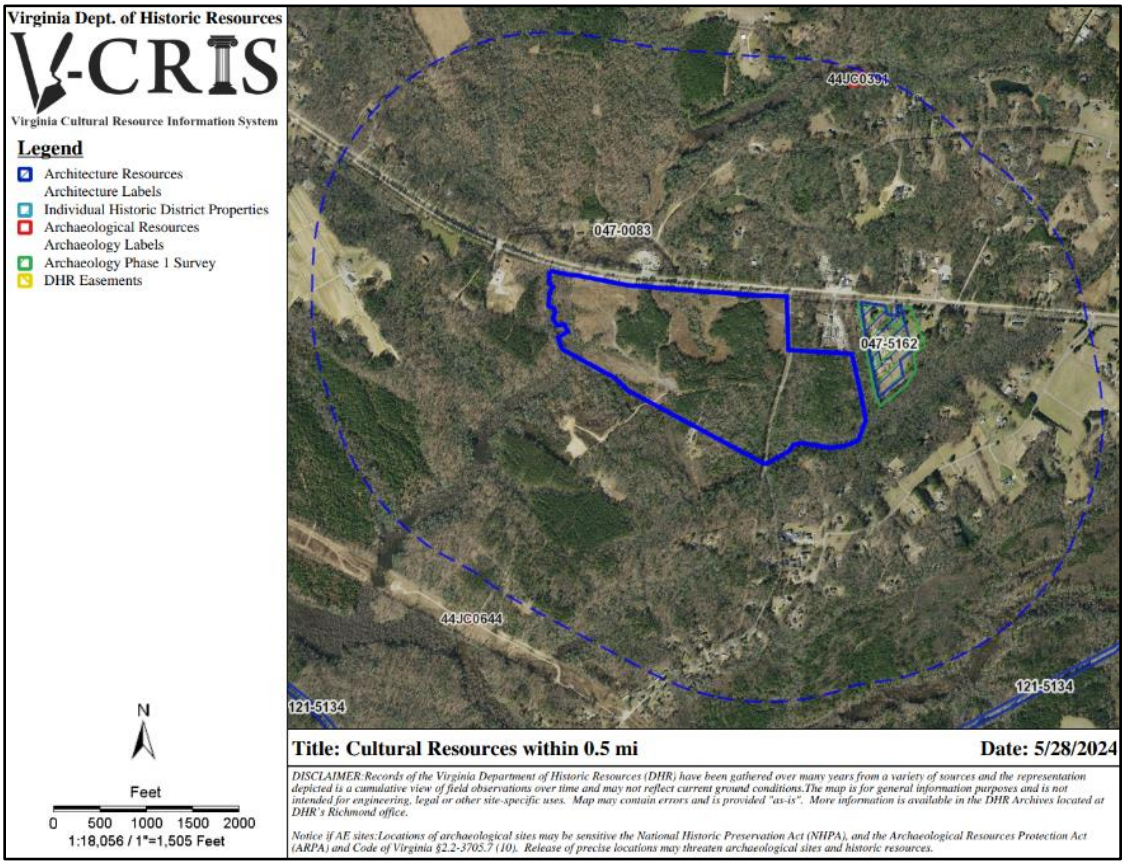


Figure 6. Map of previously recorded historic resources within a 0.5-mile buffer.

Site/Structure	Name	Type	Temporal Affiliation	NR Eligibility
047-0083	Rowell, Alice, House	Dwelling	1900	N/A
047-5162	House, 8841 Richmond Road, Victorian Acres Farm	Farmstead	1920	N/A
44JC0391		Lithic Scatter	Woodland Period	N/A

Table 1. Historic resources recorded within a 0.5-mile buffer.

Expanding the V-CRIS search to 1 mile takes in three additional architectural resources, six additional archaeological sites, and no Phase I surveys (Figure 7 and Table 2).

Architectural resource 047-5238 is a house that was constructed in 1915. Architectural resource 047-5242 is a house that was constructed in 1930. Neither of these two resources have been evaluated for NRHP listing by DHR staff. Architectural resource 121-5134 is the CSX Railroad which was constructed in 1881 for the Chesapeake and Ohio Railroad. This resource has been determined Eligible for NRHP listing by DHR staff.

Archaeological site 44JC0267 is a 19th century dwelling that is map projected. Archaeological site 44JC0392 is a Woodland Period lithic scatter. Archaeological site 44JC0393 is a 19th century dam. Archaeological site 44JC0642 is a Pre-Contact period lithic scatter. Archaeological site 44JC0644 is a Woodland Period lithic scatter. Archaeological site 44JC1392 is a 20th century dwelling. None of these resources have been evaluated for NRHP listing by DHR staff.

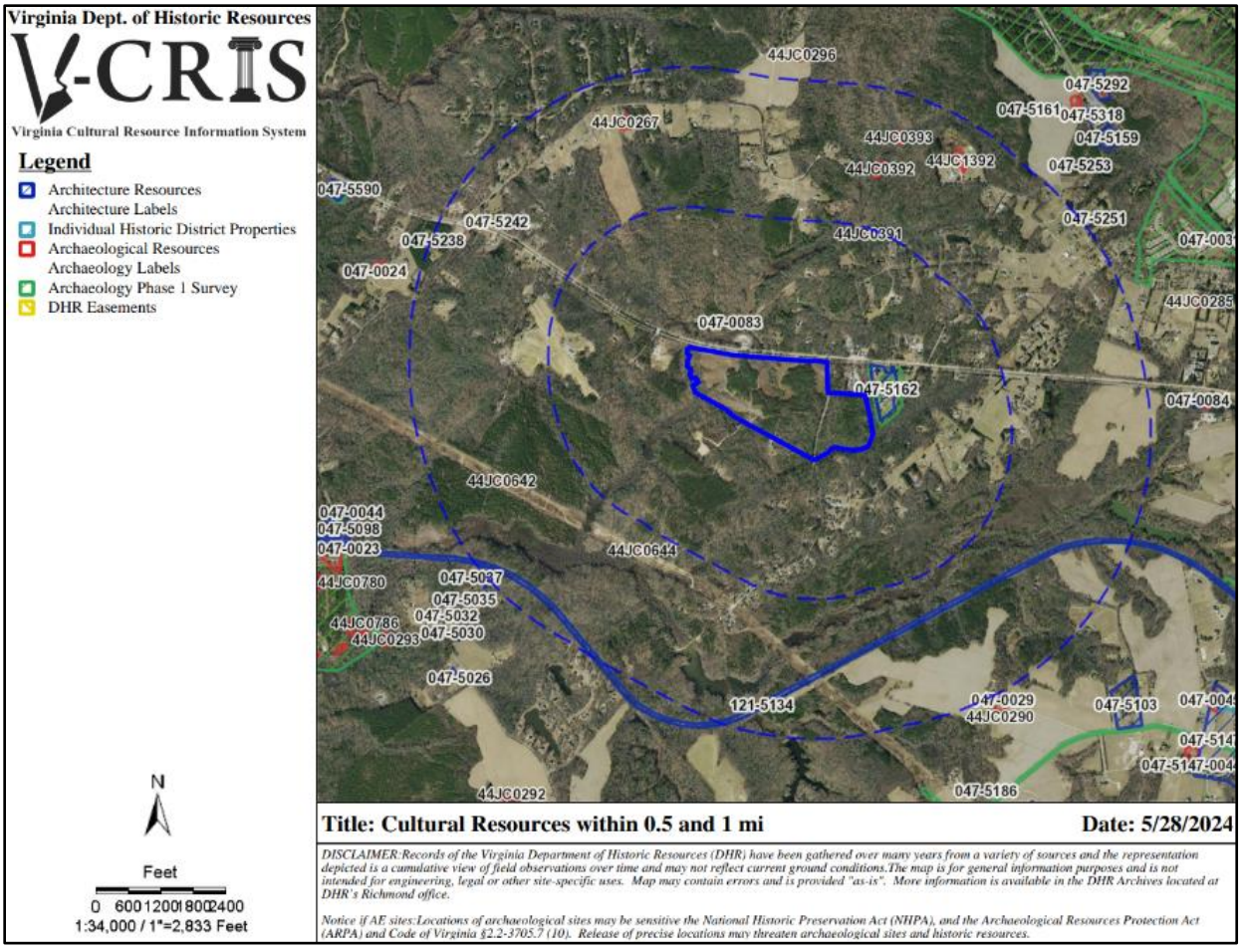


Figure 7. Previously recorded Historic Resources within a 1.0-mile buffer.

Site/Structure	Name	Type	Temporal Affiliation	NR Eligibility
047-5238	House, 8897 Barnes Road	Dwelling	1915	N/A
047-5242	9152 Richmond Road at Barnes Road, House, 9152 Richmond Road	Dwelling	1930	N/A
121-5134	Chesapeake and Ohio Railroad, CSX Railroad	Railroad	1881	Eligible
44JC0267		Dwelling	19th Century	N/A
44JC0392		Lithic Scatter	Woodland Period	N/A
44JC0393		Dwelling	19th Century	N/A
44JC0642		Lithic Scatter	Pre-Contact Period	N/A
44JC0644		Lithic Scatter	Woodland Period	N/A
44JC1392		Dwelling	20th Century	N/A

Table 2. Historic resources recorded within a 1.0-mile buffer.

Historic Aerial Photo and Map Review

A review of aerial photos and historic maps available through online sources reveals that the project parcel has been wooded since at least 1950 (Figure 8 through Figure 14). The parcel is cut into two sections by Rte. 657 in the eastern portion. Several dirt roads are located in the western portion, including Hill Lane which cuts through the parcel in the southern section to a residential development located outside the project parcel. Large groups of pine trees in the western portion of the parcel were harvested in the 21st century and scrub grass has been allowed to grow back. A radio tower is noted along Hill Lane inside the project parcel in the 1965 topographic map. Rte. 657 and Hill Lane are noted on the 1953 topographic map which indicates that they were constructed sometime before then. Multiple structures are noted on this map along Rte. 60 to the west and east of the project parcel and Rte. 657 south of the project parcel. Rte. 60 is not noted on the 1918 topographic map but Rte. 657 is noted as a dirt road in approximately the same orientation as present.

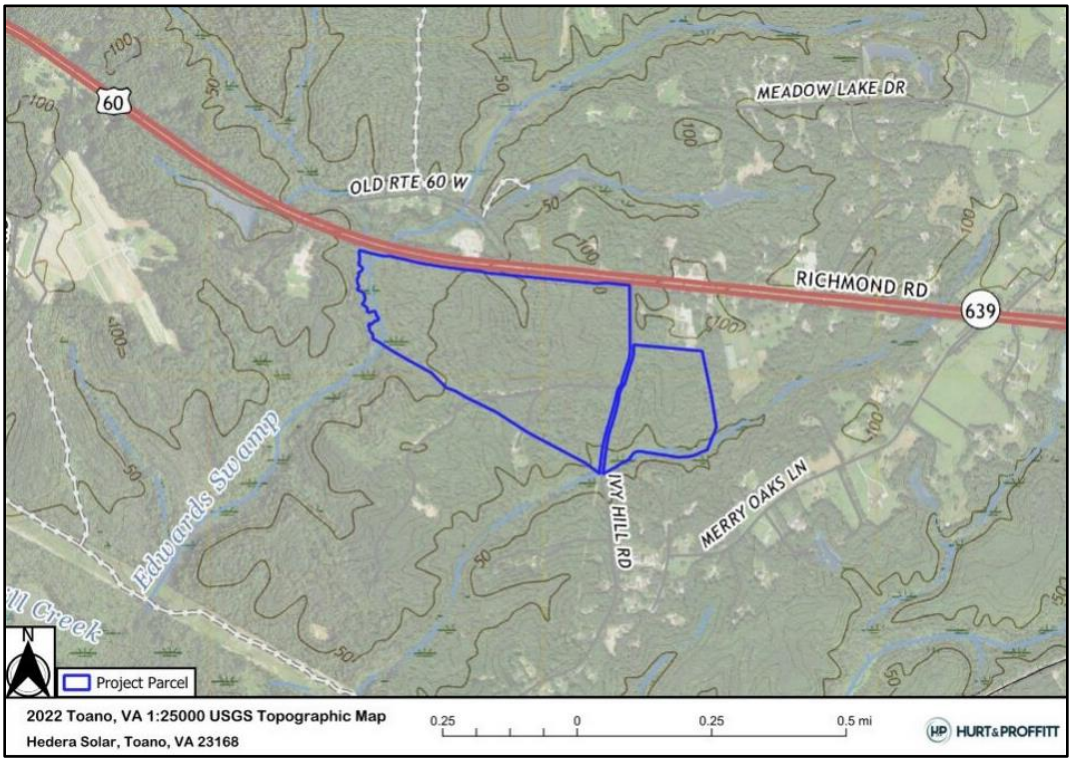


Figure 8. Project area depicted on 2022 Toano, VA 1:24000 USGS topographic map. Parcel in blue (VGIN 2023).



Figure 9. Aerial photo from 2010 depicting the project parcel in red (Google Earth).



Figure 10. Aerial photo from 1994 depicting the project parcel in red (Google Earth).

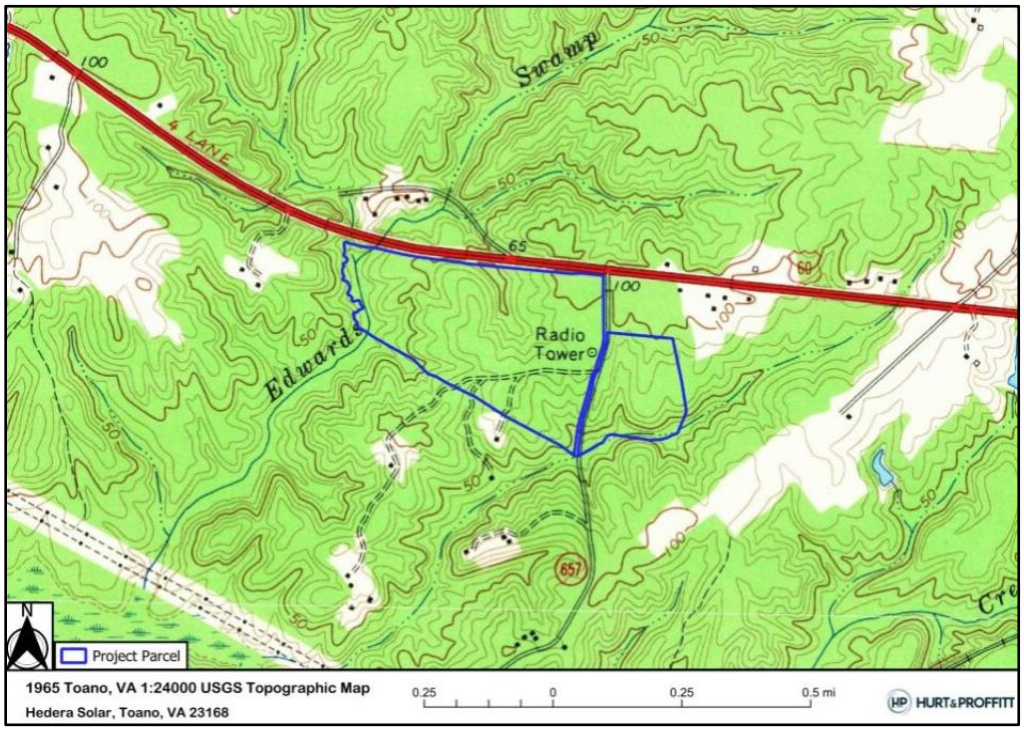


Figure 11. Project area depicted on 1965 Toano, VA 1:24000 USGS topographic map; parcel in blue (USGS 2024).



Figure 12. Aerial photo from 1953 depicting the project parcel in blue (James City County GIS).

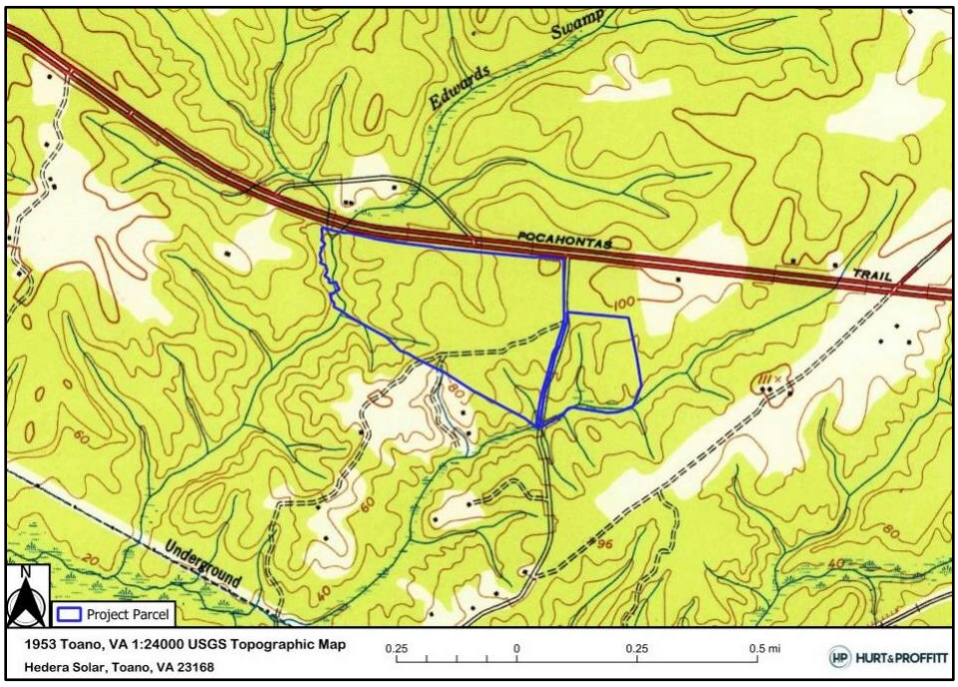


Figure 13. Project area depicted on 1953 Toano, VA 1:24000 USGS topographic map; parcel in blue (USGS 2024).

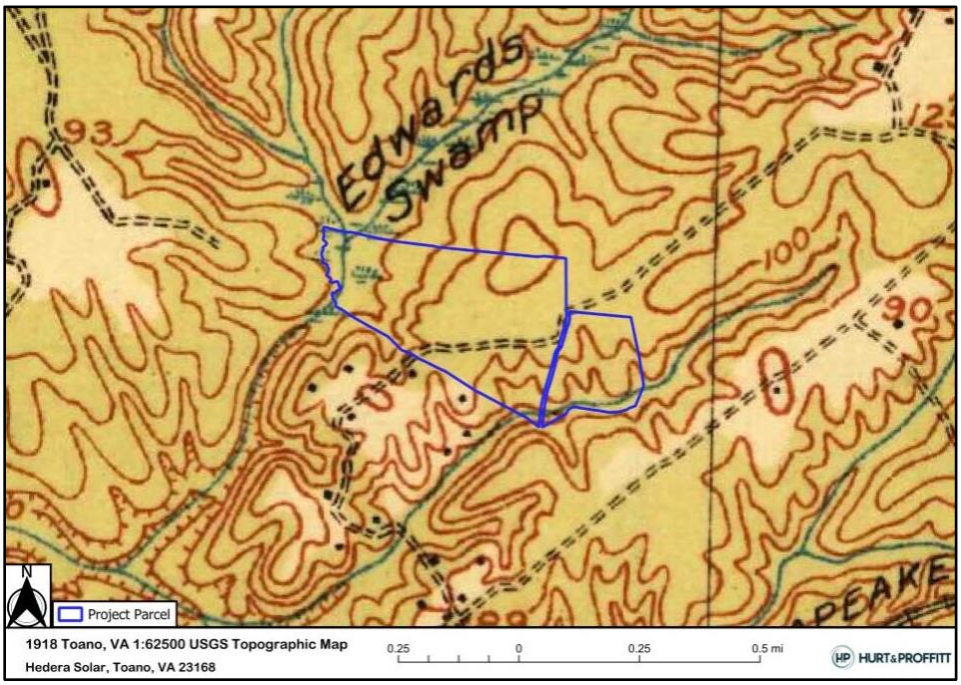


Figure 14. Project area depicted on 1918 Toano, VA 1:62500 USGS topographic map (USGS 2024).

A Civil War era map depicts the project area in relative detail (Figure 15). The project area is depicted as entirely wooded with no roads nearby. Tributaries of Edwards Swamp and Mill Creek are shown surrounding the parcel but are unlabeled. The 1827 Boye map of Virginia shows the project area with minimal detail (Figure 16). Several roads are depicted in the general vicinity of the project area, but not in the immediate location. The Chickahominy River is depicted to the southwest of the project area, but Edwards Swamp and Mill Creek tributaries are not shown. The Fry and Jefferson map of 1755 shows the Chickahominy River to the southwest of the project area and a road to the northeast, but no roads in the immediate project vicinity (Figure 17). The Smith map of 1624 depicts the project area and the Chickahominy and York Rivers (Figure 18). Several Native American settlements are shown surrounding the project area.



Figure 15. Project vicinity depicted on 1863 survey map. Confederate States Of America. Army. Dept. Of Northern Virginia. Chief Engineer's Office, Albert H Campbell, and J. Houston Patton. *Map of New Kent, Charles City, James City and York counties* (Library of Congress).



Figure 16. Project vicinity depicted on Böÿe, Herman, Henry Schenck Tanner, E. B Dawson, and William Branch Giles, 1827 *A map of the state of Virginia: reduced from the nine-sheet map of the state in conformity to law.* H.S. Tanner and E.B. Dawson, Philadelphia, Pennsylvania (Library of Congress).



Figure 17. Project vicinity depicted on Fry, Joshua, Peter Jefferson, Robert Sayer, and Thomas Jefferys, 1755. *A map of the most inhabited part of Virginia containing the whole province of Maryland with part of Pensilvania, New Jersey and North Carolina*. Printed for Robt. Sayer, London (Library of Congress).

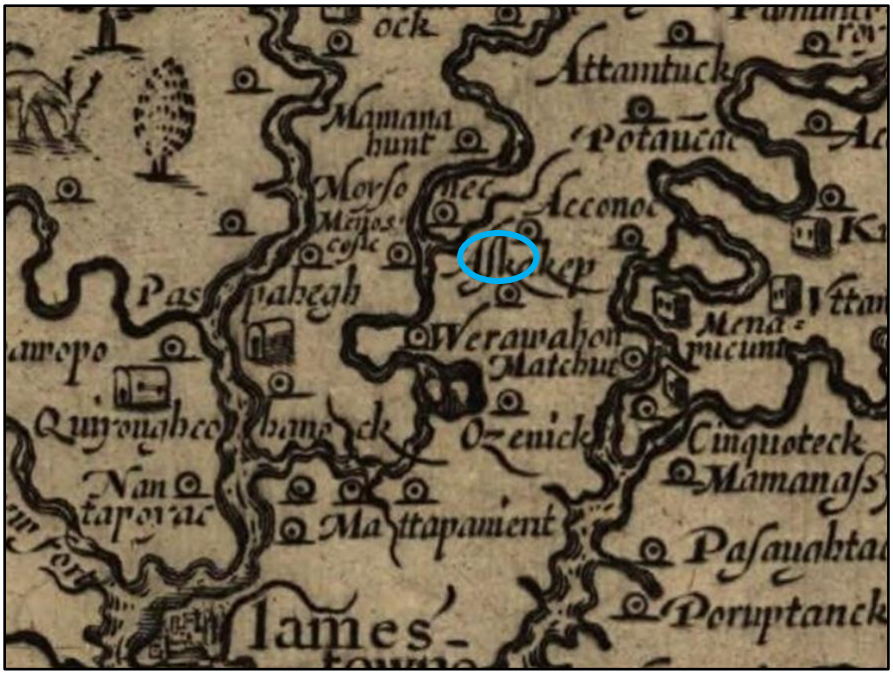


Figure 18. Project vicinity depicted on Smith, John and Hole, William map, 1624. *Virginia*. Printed in London (Library of Congress).

Archaeological Survey Reconnaissance

H&P completed an archaeological reconnaissance of the project area to search for surface evidence of sites and to determine the most appropriate survey methodology should Phase 1B archaeological survey be required. This survey was completed by SOI-qualified archaeologist Jessica Gantzert.

The pedestrian reconnaissance revealed that the tract is currently planted with pine trees for silviculture. No above-ground evidence of sites was noted, such as walls, foundations, ornamental plantings, wells/depressions or cemeteries. Rte. 657 bisects the project parcel and Hill Lane cuts through the southern portion of the western section of the parcel (Figure 19 through Figure 21).

Because the project area has been logged for silviculture, an archaeological survey would need to employ subsurface testing in the form of shovel test pits (STPs) at reduced (10%) coverage.



Figure 19. Photograph of the western portion of the parcel. Photo by author.



Figure 20. Photo showing growth in recently harvested area. Photo by author.

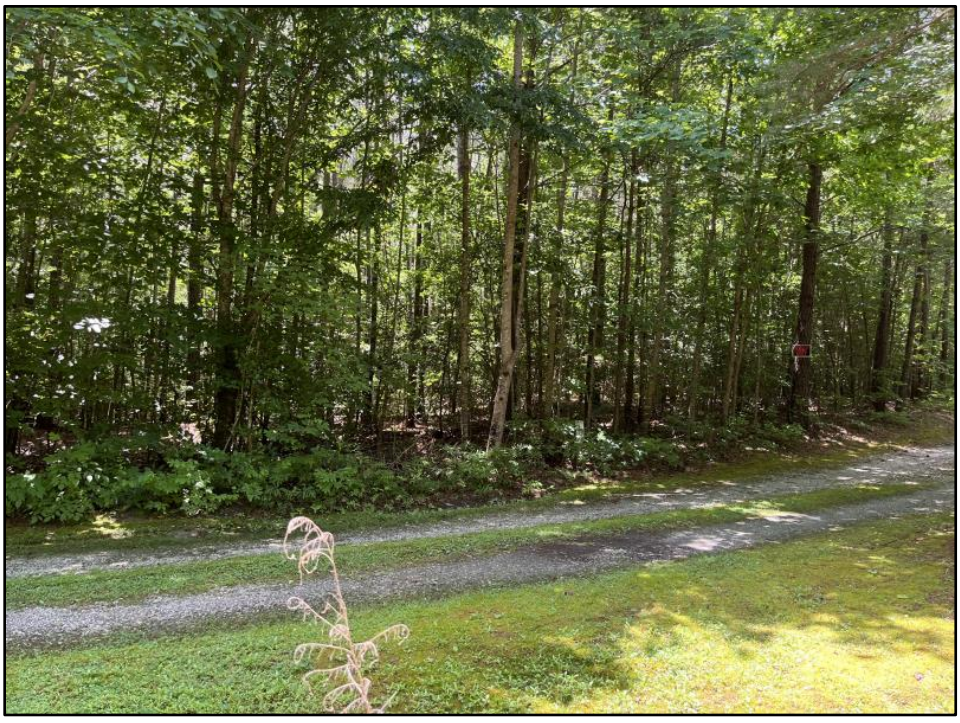


Figure 21. Photo showing Hill Lane. Photo by author.

Architectural Survey Reconnaissance

The reconnaissance-level survey completed for this project included background research of James City County records and V-CRIS survey files at the Virginia Department of Historic Resources (VDHR). The Area of Potential Effects (APE) for the architectural survey included those parcels within 0.5 miles (0.8 km) of the proposed limits of disturbance of the solar farm (Figure 22 and Table 3).

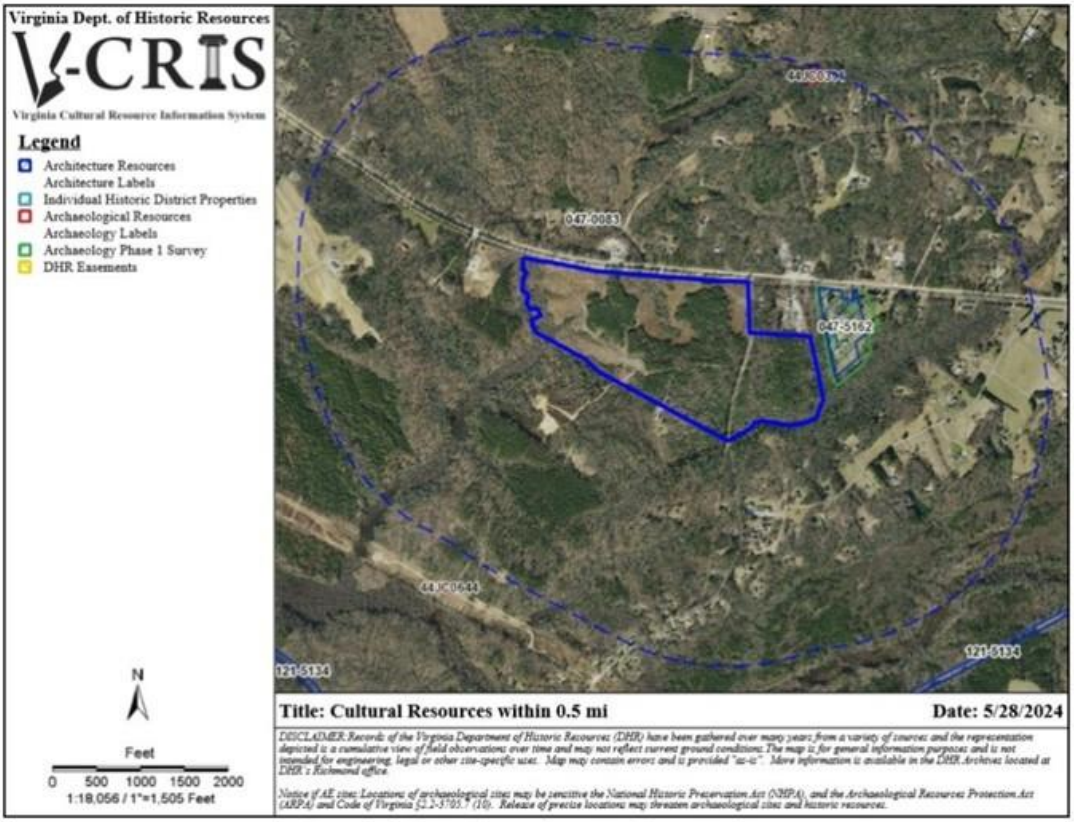


Figure 22. VCRIS map showing previously recorded historic resources within 0.5 miles. Parcel outlined in blue.

H&P collected information on known architectural resources within a half-mile radius of the proposed solar site and initial background research was completed using James City County GIS and survey files at VDHR (Table 3). There are seven previously recorded architectural resources within 0.5 miles (0.8 km) of the project parcel.

DHR ID	Name	Eligibility for NRHP
047-0083	Alice Roswell House	Not Evaluated
047-5162	Victorian Acres Farm	Not Evaluated

Table 3. Previously recorded architectural resources within 0.5-miles of the project parcel.

Resource 047-0083, known as the Alice Roswell House, is a one-story frame house constructed in 1900. The survey date is unknown. The resource was not observed during the field survey and aerial photographs suggest that the house was demolished between 1970 and 1986. Resource 047-5162, known as Victorian Acres Farm, is a Colonial Revival house constructed circa 1920 and was last surveyed in 2019. Located at 8841 Richmond Road, the house is now part of the Lifepoint Christian Church campus, located northeast of the project parcel.

H&P staff reviewed James City County GIS data to identify new potential architectural resources within the 0.5-mile APE. One-hundred and fifty-seven address points are within 0.5 miles of the project parcel, including eighteen new architectural resources, built prior to 1979 (Figure 23). The Phase 1A architectural survey's purpose was to identify the two previously recorded and eighteen newly identified architectural resources within the APE, determine viewsheds, and make a preliminary determination of eligibility for listing in the NRHP. Architectural resources were identified along the following roads within 0.5-miles of the site: Hill Lane, Ivy Hill Road, Old Route 60 West, and Richmond Road.

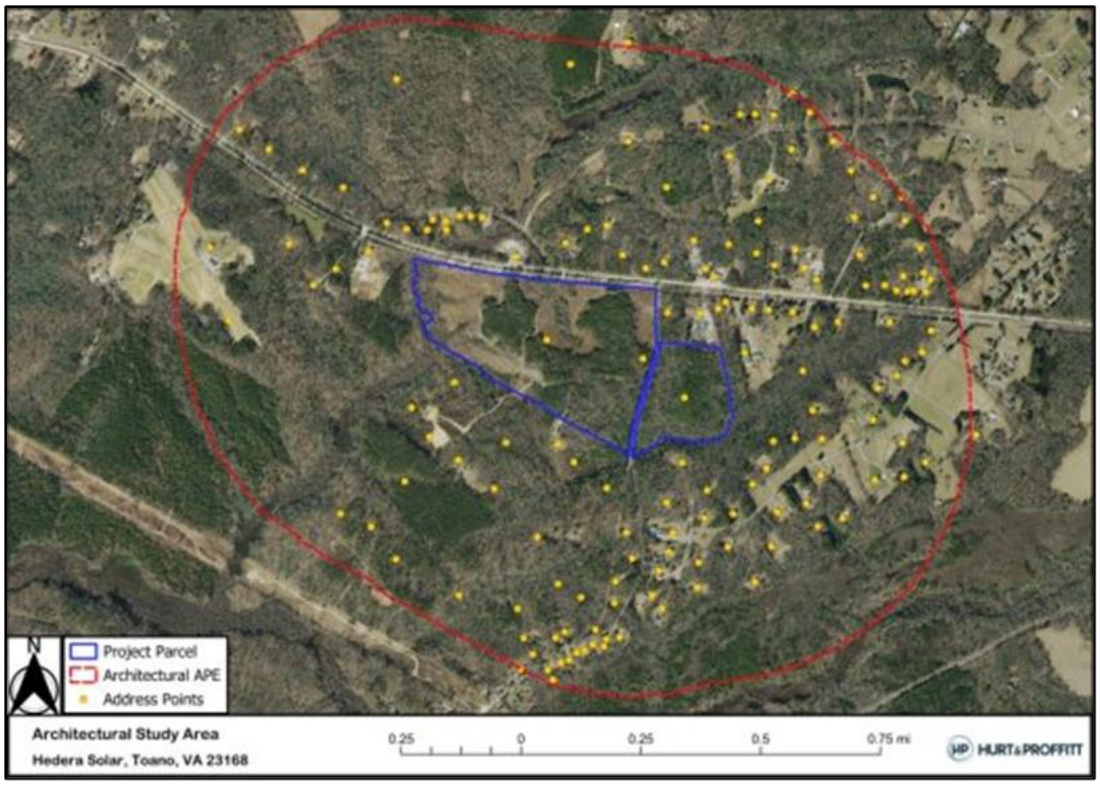


Figure 23. Address points within 0.5-mile APE. Parcel is outlined in blue. The 0.5-mile APE is outlined in red.

The following newly identified architectural resources are within 0.5 miles (0.8 km) of the proposed project area (Table 4):

Resource	Date	Preliminary Determination of NRHP Eligibility
House, 9086 Richmond Rd	1948	Not Eligible
Outbuilding, 8990 Richmond Rd	1900	Not Eligible
House, 8864 Richmond Rd	1950	Not Eligible
House, 8864 Richmond Rd	1950	Not Eligible
House, 8859 Richmond Rd	1959	Not Eligible
House, 8847 Richmond Rd	1960	Not Eligible
House, 8831 Richmond Rd	1960	Not Eligible
House, 8809 Richmond Rd	1973	Not Eligible
House, 8788 Richmond Rd	1940	Not Eligible
House, 8774 Richmond Rd	1971	Not Eligible
House, 2015 Old Route 60 W	1960	Not Eligible
House, 2011 Old Route 60 W	1949	Not Eligible
House, 268 Ivy Hill Rd	1964	Not Eligible
House, 260 Ivy Hill Rd	1960	Not Eligible
House, 248 Ivy Hill Rd	1978	Not Eligible
House, 244 Ivy Hill Rd	1968	Not Eligible
House, 193 Ivy Hill Rd	c. 1900	Not Eligible
House, 196 Hill Ln	c. 1900	Not Eligible

Table 4. Newly identified architectural resources within 0.5 miles of the project parcel.

The eighteen newly identified architectural resources are primarily residential, constructed between 1900 and 1979, with three constructed circa 1900, six constructed between 1940-1959, and nine constructed between 1960 and 1979. None of the newly identified architectural resources are considered potentially eligible for the NRHP based on the preliminary survey.

A topographical viewshed analysis was carried out using raster data from the USGS Digital Elevation Model (DEM) derived from LiDAR point cloud data using the UTM 17N coordinate system (Figure 24). Points of outgoing views were selected within the project area on a 15-meter grid with additional points placed in higher elevations. Each point was specified as 2 meters off the ground to replicate the approximate height of solar panels. The map highlights as purple the areas within 0.5-miles that would have a view of the project area based on topography alone. This analysis does not consider tree cover or other visual barriers.

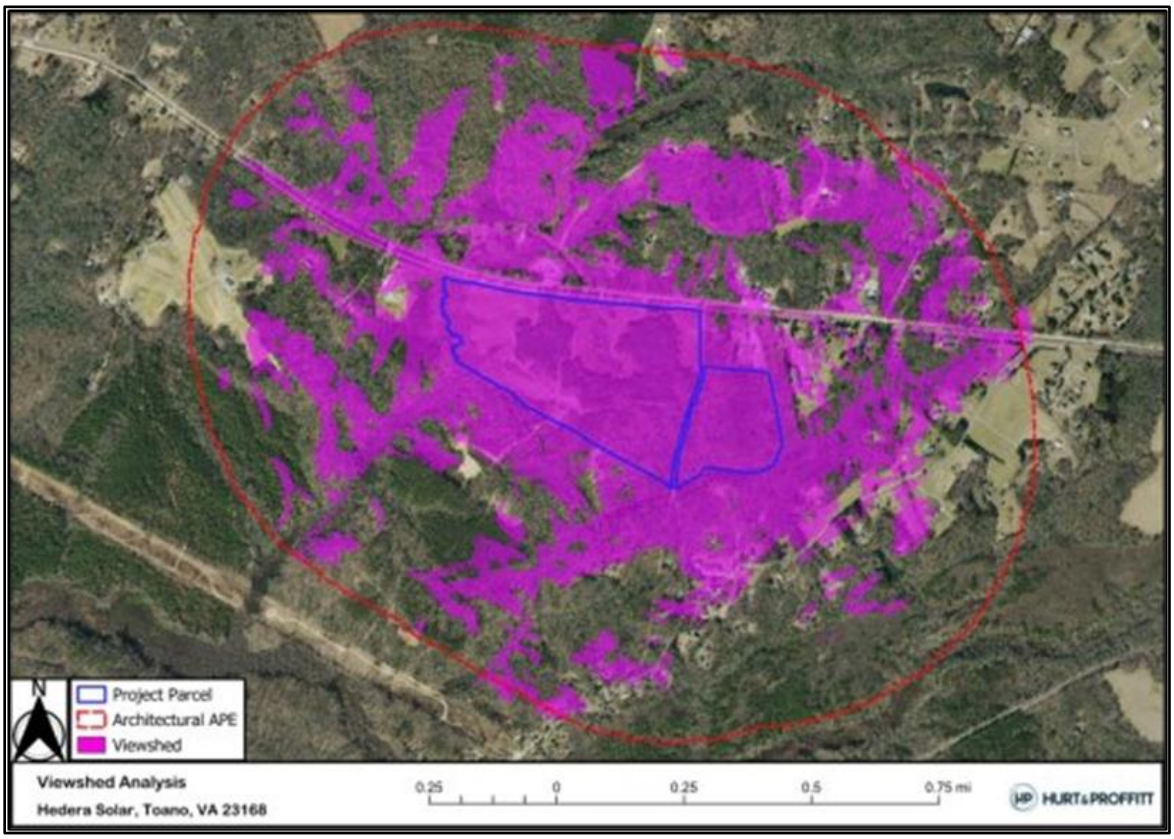


Figure 24. Topographical viewshed analysis. The parcel is outlined in blue and the 0.5-mile architectural APE is outlined in red. Highlighted in purple are areas with potential views of the project area based on topography alone.

The topography reduces the view of the project area from the outer edges of the APE, especially to the southeast. The viewshed is further limited by the presence of significant tree cover, including silviculture, which surrounds the project area to the south, east, and west. Field observations confirmed that properties on Old Route 60 West, north of the project area, do not have a view of the site, nor do properties on the southern portion of Ivy Hill Road, potentially reducing by six the number of properties to be surveyed.

The architectural APE for the project is the limits of disturbance of the project footprint, and those parcels within 0.5 miles, considering the viewshed based on topography. Based on the results of the preliminary survey, H&P recommends that nineteen architectural resources are located within 0.5 miles of the project area, including one previously recorded architectural resource which has not been evaluated. Viewsheds would need to be coordinated with DHR to reduce the APE or nineteen architectural resources would need to be surveyed. No potential National Register eligible architectural resources are located within the project's Area of Potential Effects for architecture.

Analysis and Recommendations

H&P reviewed online sources related to the project parcel's environmental setting, previous cultural resources surveys in the vicinity of the parcel, previously recorded cultural resources in the vicinity, historic aerial images and historic maps. H&P staff conducted a site visit to identify and photograph each architectural resource and refine the architectural APE for the project. This allows us to assess the potential for the project APE and its immediate vicinity to contain historic properties that may be affected by any future project and to make recommendations concerning the need for cultural resources surveys.

The review shows that the property consists primarily of silviculture forest, and approximately 55 percent of the area is considered prime farmland. The parcel is relatively flat in the central region with intermittent streams cutting steeply sloped ridge fingers in the northwestern and southeastern regions. The gently sloping parts of the project area may have been attractive to Native Americans for hunting and constructing temporary encampments. The presence of arable land and nearby water suggests that there is a moderate potential for pre-contact period sites.

Historic aerial images and maps show that the project area was harvested once for silviculture in the 2000s but had been wooded and undeveloped throughout the 20th century. Rte. 657 is depicted on the 1918 topographic map bisecting the parcel in approximately the same orientation as present. Prior to that period, the project area appeared in few detailed maps. Due to the presence of historic roads near the parcel, there is a moderate potential for historic-period sites.

Archaeological data is scarce in the project vicinity because relatively few archaeological surveys have been completed. There are four Pre-Contact period and three historic period archaeological sites recorded with 1 mile of the project parcel.

A reconnaissance-level field survey of the project was completed by H&P staff in May 2024 in order to assess field conditions and refine the architectural APE. This revealed that the tract is currently planted with pine trees for silviculture. No above-ground evidence of sites was noted, such as walls, foundations, ornamental plantings, wells/depressions or cemeteries. Dirt logging roads cross the project area. Because the project area has been logged for silviculture, an archaeological survey would need to employ subsurface testing in the form of shovel test pits (STPs) at reduced (10%) coverage.

Based on the results of the preliminary survey, H&P recommends that nineteen architectural resources are located within 0.5 miles of the project area, including one previously recorded architectural resource which has not been evaluated. Viewsheds would need to be coordinated with DHR to reduce the APE or nineteen architectural resources would need to be surveyed. No potential National Register eligible architectural resources are located within the project's Area of Potential Effects for architecture.

It is our opinion, therefore, that the APE **has moderate potential (risk) to contain pre-contact period archaeological sites and moderate potential (risk) for the presence of historic period archaeological sites. We recommend archaeological survey at a reduced (10%) coverage in**

the silvicultural forest, and full architectural survey be conducted in advance of any development of this property.

Sincerely,

Hurt & Proffitt, Inc.



Jessica Gantzert, RPA
Principal Investigator

Attachment

V-CRIS forms for cultural resources recorded within 0.5-miles of the project parcel boundaries:

Property Information

Property Names

Name Explanation	Name
Historic/Current	Rowell, Alice, House

Property Addresses

Current - 2015 Rt. 620

County/Independent City(s): James City (County)
Incorporated Town(s): *No Data*
Zip Code(s): *No Data*
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): TOANO

Property Evaluation Status

Not Evaluated

Additional Property Information

Architecture Setting: *No Data*
Acreage: *No Data*
Site Description:

No Data

Surveyor Assessment:

No Data

Surveyor Recommendation: *No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling
NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: 1900
Date Source: Site Visit/Photograph
Historic Time Period: Reconstruction and Growth (1866 - 1916)
Historic Context(s): Domestic
Other ID Number: *No Data*
Architectural Style: Other
Form: *No Data*
Number of Stories: 1.0
Condition: Fair
Threats to Resource: Deterioration
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

No Data

Exterior Components

Component	Component Type	Material	Material Treatment
Structural System and Exterior Treatment	Frame	*No Data*	Siding, Asbestos
Windows	Sash, Double-Hung	*No Data*	1/1
Porch	1-story	*No Data*	Screened

Roof	Gable	Asphalt	Shingle

Secondary Resource Information

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: *No Data*
Organization/Company: Unknown (DSS)
Photographic Media: *No Data*
Survey Date: *No Data*
Dhr Library Report Number: *No Data*
Project Staff/Notes:
No Data

Bibliographic Information

Bibliography:
No Data
Property Notes:
No Data

Property Information

Property Names

Name Explanation	Name
Current Name	Victorian Acres Farm
Function/Location	House, 8841 Richmond Road

Property Evaluation Status

Not Evaluated

Property Addresses

Current - 8841 Richmond Road Route 60

County/Independent City(s): James City (County)
Incorporated Town(s): *No Data*
Zip Code(s): 23168
Magisterial District(s): *No Data*
Tax Parcel(s): *No Data*
USGS Quad(s): TOANO

Additional Property Information

Architecture Setting: Rural
Acreage: 10.17

Site Description:

2007: This resource is located on the south side of Richmond Road, west of Merry Oaks Lane.

April 2019: Circa~ re-surveyed the site during the course of the Phase I survey and noted the house. The parcel containing the house does include several outbuildings and since the original surveys the owner of the house has purchased the adjoining parcel. Thus, Circa~ also identified two garages, two barns, one pole barn, one shed, one swimming pool, one pool house, one well, one barbeque pit, and one pen. This site is situated on the southern side of Richmond Road on an approximately 10.17-acre parcel close to Richmond Road surrounded by mowed lawn with scattered mature trees and plantings. Facing north, the building is set on a fairly-level grade with a single-lane, paved driveway leading from Richmond Road to the west of the house. A slate walkway leads from the house to the driveway. A series of interconnecting slate walkways are visible in the backyard with a painted-black metal lamppost to the south of the house. A second single-lane gravel driveway leads from Richmond Road to the west of the house into the property where it ends in a circle. There is a wood basketball hoop at the end of the driveway adjacent to the garage and a wooden pole with a mercury vapor light attached to the top is situated at the entrance of the driveway near Richmond Road. Overhead utility lines run parallel to Richmond Road. A painted-white wooden picket fence gate is situated at the entrance of the driveway and a three-rail, painted-white fence runs parallel to Richmond Road. There is also a wooden privacy fence that runs along the western edge of the property. The fence transitions to a four-rail, painted-white wood fence to the rear of the property. A wooden sign attached to one of the barns notes that the property is known as Victorian Acres Farm.

Surveyor Assessment:

1999 with corrections, 2007: This is a very nicely maintained Colonial Revival style dwelling. It has original windows and large trees in the yard. This resource is probably a good candidate for a more intensive recordation.

April 2019: Site 047-5162, the circa 1920 house, appears to be occupied and in fair condition. The building does not possess any unique characteristics that would separate it from other early-20th century suburban housing examples in James City County. The design and workmanship of the building is undistinguished, and the construction materials are common (Criterion C). The house is a Colonial Revival style, which is common throughout James City County and Virginia. A preliminary review of historic records including various maps and historical contexts for James City County does not indicate significant contributions with events (Criterion A) or persons (Criterion B) associated with the property. Further, the house has undergone considerable renovations with six additions constructed on the elevations. The property has also been consolidated with the adjacent parcel that contains several outbuildings constructed in the 1980s. These buildings are now associated with this resource and alter the primary resource's setting, feeling, and association, particularly are they were constructed some 60 years after its construction. Considering this, the building does not appear to be potentially eligible for the National Register of Historic Places under Criteria A, B, or C. Thus, Circa~ recommends no further architectural survey work on this resource and no further architectural survey for the project.

Surveyor Recommendation: Recommended Not Eligible

Ownership

Ownership Category	Ownership Entity
Private	*No Data*

Primary Resource Information

Resource Category: Domestic
Resource Type: Single Dwelling

NR Resource Type: Building
Historic District Status: *No Data*
Date of Construction: Ca 1920
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Architecture/Community Planning, Domestic
Other ID Number: *No Data*
Architectural Style: Colonial Revival
Form: *No Data*
Number of Stories: 2.0
Condition: Good
Interior Plan: Side Passage, Double Pile
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

1999 with corrections, 2007: This is a frame, two-story, three-bay, side passage dwelling on a brick foundation. There is a gable front roof with a box cornice and an asphalt shingle covering. There are two, one-story additions located on the left and the right of the house. The addition on the left side has a side gabled roof and the addition on the right side has a flat roof. The windows are two-over-two double-hung sash and they have shutters. The windows on the front of the additions are paired. There is a pedimented front entrance porch, which has a a gable roof and is supported by two round columns. The underside of the porch roof is curved. The front door has side lights. There is an enclosed porch on the rear. There is one exterior brick chimney

April 2019: This circa 1920, two-and-a-half-story, three-bay, front-gable, Colonial Revival style, wood-frame house is clad in painted-white composition siding and rests on a Flemish-bond brick foundation with two exterior-end Flemish-bond brick chimneys with corbelled caps and metal vent caps. The roof is covered in asphalt shingles with overhanging eaves and cornice returns. There is a one-story, one-bay, poured-concrete and Flemish-bond brick porch under a front-gable with cornice returns supported by tapered, painted-white wood columns. Two Flemish-bond brick steps lead from the porch to the walkway. Single and paired, sash, double-hung, 2/2, wood-frame windows flanked by painted-black wood shutters are typical on the façade and elevations with sash, double-hung, 1/1, wood-frame windows flanked by painted-black shutters typical in the gable ends. The entrance on the façade is a single-leaf, wood-panel door with sidelights covered by a metal storm door.

There is a one-story, one-bay, shed roof, wood-frame addition attached to the side (east) elevation clad in painted-white composition siding and resting on a Flemish-bond brick foundation. The roof is covered in standing seam metal. Paired, sash, double-hung, 2/2, wood-frame windows flanked by painted-black wood shutters are typical on the addition. No entrance is visible on the addition.

There is a one-story, one-bay, shed roof, wood-frame addition attached to the east elevation of the addition clad in painted-white composition siding and resting on a raised Flemish-bond brick foundation. The roof is covered in standing seam metal with metal gutters and downspouts. Paired, sash, double-hung, 1/1, wood-frame windows flanked by painted-black wood shutters are typical on the addition. No entrance is visible on the addition.

There is a one-story, three-bay, shed roof, wood-frame addition attached to the side (east) elevation and the south elevations of the additions clad in painted-white composition siding and resting on a Flemish-bond brick foundation. The roof is covered in asphalt shingles with a boxed cornice. Single and paired, fixed, two-light, wood-frame windows are typical on the addition. No entrance is visible on the addition.

There is a one-story, one-bay, flat roof, wood-frame addition attached to the side (west) elevation clad in painted-white composition siding and resting on a Flemish-bond brick foundation. The roof is covered in asphalt shingles with overhanging eaves. Sash, double-hung, 2/2, wood-frame windows flanked by painted-black wood shutters are typical on the addition. No entrance is visible on the addition.

There is a one-story, three-bay, hipped roof, wood-frame addition attached to the rear (south) elevation clad in painted-white composition siding and resting on a Flemish-bond brick foundation. The roof is covered in asphalt shingles with a boxed cornice. There is a two-bay, wood deck with a wood balustrade. Three wood steps flanked by wood railings lead from the deck to the backyard. Sash, double-hung, 1/1, wood-frame windows and fixed, one-light, wood-frame windows are typical on the addition. The entrance on the addition is a single-leaf, wood-panel door with a center light.

There is a one-story, one-bay, front-gable, wood-frame addition attached to the south elevation of the addition clad in painted-white composition siding and resting partially below grade on a concrete-block foundation. The roof is covered in asphalt shingles. No windows are visible on the addition. The entrance on the addition is a single-leaf, vertical wood plank door.

Exterior Components

Component	Component Type	Material	Material Treatment
Windows	Sash, Double-Hung	Wood	2/2
Roof	Gable, Front	Asphalt	Shingle
Foundation	Solid/Continuous	Brick	Flemish Bond
Structural System and Exterior Treatment	Wood Frame	Composite	Siding
Porch	Stoop/Deck	Wood	Posts
Windows	Fixed	Wood	*No Data*
Chimneys	Exterior End	Brick	Flemish Bond

Secondary Resource Information

Secondary Resource #1

Resource Category: Domestic
Resource Type: Garage
Date of Construction: 1920Ca
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the west of the house, there is a circa 1920, one-story, two-bay, front-gable, wood-frame garage clad in painted-white composition siding and resting on a concrete-block foundation (noted as Garage 1 on the site plan). The roof is covered in asphalt shingles. No windows are visible on the façade; fixed, one-light, wood-frame windows are typical on the elevations. The entrance on the façade consists of two roll-up metal garage doors. There is a single-leaf wood door on the side (east) elevation.

There is a one-story, one-bay, side-gable, wood-frame addition attached to the rear (south) elevation clad in painted-white composition siding and resting on a concrete-block foundation with one interior-end concrete block chimney. The roof is covered in asphalt shingles with metal gutters and downspouts. Fixed, one-light, wood-frame windows are typical on the addition. The entrance on the addition is a double-leaf, wood-frame sliding glass door flanked by painted-black wood shutters.

Number of Stories: 1
Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Block
Structural System and Exterior Treatment	Wood Frame	Composite	Siding
Windows	Fixed	Wood	*No Data*
Roof	Front Gable	Asphalt	*No Data*
Roof	Side Gable	Asphalt	*No Data*

Secondary Resource #2

Resource Category: Domestic
Resource Type: Garage
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, three-bay, side-gable, wood-frame garage clad in vertical wood siding and resting on a poured-concrete slab-on-grade foundation (noted as Garage 2 on the site plan. The roof is covered in standing seam metal with overhanging eaves and one cupola with a pyramidal roof and a metal weather vane at the roof peak. No windows are visible on the garage. The entrance on the façade consists of three roll-up metal garage doors.

Number of Stories: 1
Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Slab	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Wood	Siding
Roof	Side Gable	Metal	*No Data*

Secondary Resource #3

Resource Category: Agriculture/Subsistence
Resource Type: Barn
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, seven-bay, side-gable, wood-frame barn clad in vertical wood siding and resting on a poured-concrete slab-on-grade foundation (noted as Barn 1 on the site plan). The roof is covered in standing seam metal with two cupolas with pyramidal roofs and metal weather vanes along the center roof peak. There is a one-story, full-width, poured-concrete porch under a shed roof supported by square metal posts. Fixed, two-light, wood-frame windows are typical on the façade and elevations and one bow window on the façade that consists of three fixed, one-light, wood-frame windows. The entrance on the façade is a single-leaf, wood-panel door with lights. There are also four single-leaf, wood-panel Dutch doors on the façade.

There is a one-story, one-bay, side-gable, hyphen that connects Barn 1 to Barn 2. The roof is covered in standing seam metal supported by metal poles resting on a poured-concrete slab-on-grade foundation. The hyphen is open on all sides.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Slab	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board
Windows	Fixed	Wood	*No Data*
Roof	Pyramidal	Metal	*No Data*

Secondary Resource #4

Resource Category: Agriculture/Subsistence
Resource Type: Barn
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, two-bay, front-gable, wood-frame barn clad in vertical wood siding and resting on a poured-concrete slab-on-grade foundation (noted as Barn 2 on the site plan). The roof is covered in standing seam metal with overhanging eaves and metal gutters and downspouts. Five metal cupolas run along the center peak of the roof with pyramidal roofs and metal weather vanes attached to the top. No windows are visible on the faced; fixed, one-light, wood-frame windows are typical on the elevations. The entrance on the façade is a double-leaf, sliding, vertical wood plank door. There is a single-leaf, wood-panel door with lights to the east of the main entrance. There are two sets of double-leaf, sliding, vertical wood plank doors on the side (east) elevation.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Slab	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Wood	Vertical Board
Windows	Fixed	Wood	*No Data*
Roof	Front Gable	Metal	*No Data*

Secondary Resource #5

Resource Category: Agriculture/Subsistence
Resource Type: Pole Barn
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, two-bay, salt-box, wood-frame pole barn clad in vertical wood siding and resting on a raised, concrete-block foundation. The roof is covered in standing seam metal. No windows are visible on the pole barn. The façade is open.

Secondary Resource #6

Resource Category: Domestic
Resource Type: Shed
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, one-bay, front-gable, wood-frame shed clad in painted-white composition siding and resting on a poured-concrete slab-on-grade foundation. The roof is covered in standing seam metal with overhanging eaves and exposed rafter tails. No windows are visible on the shed. The entrance on the façade is not visible.

Number of Stories: 1

Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Slab	Concrete	Uncoursed
Structural System and Exterior Treatment	Wood Frame	Composite	Siding
Roof	Front Gable	Asphalt	*No Data*

Secondary Resource #7

Resource Category: Social/Recreational
Resource Type: Pool/Swimming Pool
Date of Construction: 1980Ca
Date Source: Site Visit

Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, in-ground, poured-concrete, rectangular, swimming pool surrounded by a poured-concrete apron. The pool was covered with a green vinyl cover at the time of the survey. The top of a metal ladder was visible on the south side of the pool and there is a metal and plastic ladder on the south side.

Secondary Resource #8

Resource Category: Social/Recreational
Resource Type: Pool House
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, one-story, four-bay, side-gable, wood-frame pool house clad in painted-white composition siding and resting on a concrete-block foundation. The roof is covered in asphalt shingles. There is a full-width poured-concrete stoop under a roof overhang. No windows are visible on the pool house. The entrance on the façade consists of three single-leaf, wood-panel doors and one double-leaf, wood-panel door.

Number of Stories: 1
Exterior Components

Component	Component Type	Material	Material Treatment
Foundation	Solid/Continuous	Concrete	Block
Structural System and Exterior Treatment	Wood Frame	Composite	Siding
Roof	Side Gable	Asphalt	*No Data*

Secondary Resource #9

Resource Category: Domestic
Resource Type: Well
Date of Construction: 1920Ca
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the north of the house, there is a circa 1920, rectangular, poured-concrete well resting at grade level. The top is covered with plywood and there is a single concrete block resting on top of the plywood to keep it in place.

Secondary Resource #10

Resource Category: Social/Recreational
Resource Type: Barbecue Pit
Date of Construction: 1920Ca
Date Source: Site Visit
Historic Time Period: World War I to World War II (1917 - 1945)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1920, rectangular, Flemish-bond brick barbeque pit. The pit is tiered with a metal grate on the west side for cooking and a Flemish-bond brick chimney with a corbelled cap.

Secondary Resource #11

Resource Category: Agriculture/Subsistence
Resource Type: Pen
Date of Construction: 1980Ca
Date Source: Site Visit
Historic Time Period: The New Dominion (1946 - 1991)
Historic Context(s): Domestic
Architectural Style: No discernible style
Form: *No Data*
Condition: Good
Threats to Resource: None Known
Cultural Affiliations: *No Data*
Cultural Affiliation Details:

No Data

Architectural Description:

April 2019: To the south of the house, there is a circa 1980s, square, open pen enclosed by half-story concrete-block walls. The pen is open at the top. No windows are visible on the pen. No entrance to the pen is visible.

Historic District Information

Historic District Name: *No Data*
Local Historic District Name: *No Data*
Historic District Significance: *No Data*

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: 2019-3392
Investigator: Dawn Muir
Organization/Company: Circa~ Cultural Resource Management, LLC

Photographic Media: Digital

Survey Date: 3/1/2019

Dhr Library Report Number: JC-406

Project Staff/Notes:

March 2019: In February of 2019, Circa~ Cultural Resource Management, LLC (Circa~) conducted a Phase I cultural resources survey of the Lifeway Church Tract in James City County, Virginia. The project area, which encompasses approximately 10 acres, is bordered by Richmond Road to the north, rural residential lands to the east and west, and an unnamed tributary to Edwards Mill Swamp to the south. The Area of Potential Effect (APE) for archaeological and architectural resources is the 10-acre developable project area.

At Circa~, Carol D. Tyrer served as Project Manager and Principal Investigator for the project and was assisted in the field by Matt Carr, Diana Johnson, Michael Foley, Shayne Spears, Jake Stanley, Pam Wood, and McKenzie Kyger, Field Archaeologists. Dawn M. Muir served as the Architectural Historian for the project and completed the architectural survey and historic context. Carol D. Tyrer and Dawn M. Muir prepared the report. Skye Hughes and Dawn M. Muir entered the information into the VDHR V-CRIS system and Carol D, Tyrer photographed the resource. The successful completion of the Phase I survey for the proposed development was made possible by the contribution of many individuals. In particular, Tim Davis with Vanasse Hangen Brustlin, INc. (VHB) ensured that project information and maps were always available for the study.

Project Bibliographic Information:

Circa~
2019 Phase I Cultural Resources Survey of Lifepointe Christian Church Tract, James City County, Virginia.
DHR Report No. JC-406
DHR Project No. 2019-3392

Advisory Council on Historic Preservation
1986"36 CFR Part 800 – Protection of Historic Properties (incorporating amendments effective August 5, 2004)" Regulations of the Advisory Council on Historic Preservation Governing the Section 106 Review Process. Available online at http://www.achp.gov

Anonymous
1862Map of Southeast Virginia. Colonial Williamsburg Foundation, Williamsburg, Virginia.

Berthier, Alexander
1781Untitled map of York and Gloucester. Colonial Williamsburg Foundation, Williamsburg, Virginia.

Billings, Warren M., John E. Selby, and Thad W. Tate
1986Colonial Virginia: A History. KTO Press, White Plains, New York.

Blanton, Dennis B., Wayne Walker, and Charles M. Downing
1997Preserving Our Hidden Heritage: An Archaeological Assessment of James City County, Virginia. Available at the Virginia Department of Historic Resources archives, Richmond, Virginia.

Boye, Herman
1825A map of the state of Virginia, constructed in conformity to law from the late surveys authorized by the legislature and other original and authentic documents. Available online at http://www.loc.gov/maps/collections

Carson, Cary, Norman F. Barka, William M. Kelso, Garry Wheeler Stone, and Dell Upton
1982 "Impermanent Architecture in the Southern American Colonies," Winterthur Portfolio 16: 136-196.

Chapman, Jefferson, and Andrea Brewer Shea
1981"The Archaeobotanical Record: Early Archaic Period to Contact in the Lower Little Tennessee River Valley." Tennessee Anthropologist VI (1).

Colles, Christopher
1789From Annapolis to Williamsburg. Virginia Department of Historic Resources, Richmond, Virginia.

Colonial Williamsburg Foundation.
1985Resource Protection Process for James City, York County, Williamsburg, and Poquoson, Virginia. Available at the Colonial Williamsburg Foundation, Williamsburg, Virginia.

Craven Wesley F.
1957The Southern Colonies in the Seventeenth Century 1607-1689. Louisiana State University Press, Baton Rouge, Louisiana.

Dent, Richard J., Jr
1995Chesapeake Prehistory: Old Traditions, New Directions. Plenum Press, New York, New York.

Department of the Interior, National Park Service
1983Archaeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines. Federal Register 48:44716-44762. Available online at http://www.nps.gov

Fry, Joshua and Peter Jefferson
1751A map of the most inhabited part of Virginia containing the whole province of Maryland with part of Pensilvania, New Jersey and North Carolina. Available online at http://www.loc.gov/maps/collections

Gardner, William M.
1974"The Flint Run Paleoindian Complex: A Preliminary Report 1971-1973 Seasons." Occasional Publication No. 1, Archeology Laboratory.

1977 "Flint Run Paleoindian Complex, its Implication for Eastern North American Prehistory." In "Amerinds and Their Paleoenvironment in Northeastern North America." edited by W. S. Mewman and B. Salwen, Annals of the New York Academy of Sciences.

1981 "Paleoindian Settlement Pattern and Site Distribution in the Middle Atlantic." Anthropological Careers, edited by R. H. Landmine, L. A.

Bennett, A. Brooks, and P. P. Chock.

1989 "An Examination of Cultural Change in the Late Pleistocene and Early Holocene (circa 9200 to 6800 B. C.)." In "Paleoindian Research in Virginia: A Synthesis." edited by J. Mark Wittkofski and Theodore R. Reinhart, Special Publication No. 19 of the Archeological Society of Virginia.

Gilmer, J.F.
1863Map of New Kent, James City, Charles City and York Counties. Colonial Williamsburg Foundation, Williamsburg, Virginia.

1864Vicinity of Richmond and Part of the Peninsula. Virginia Department of Historic Resources, Richmond, Virginia.

1867Vicinity of Richmond and Part of the Peninsula. Virginia Department of Historic Resources, Richmond, Virginia.

Hare, I. Knowles
1862Hare's Map of the Vicinity of Richmond and the Peninsula Campaign. Colonial Williamsburg Foundation, Williamsburg, Virginia.

Hening, William W., ed.
1809-1823 The Statutes At Large: Being a Collection of All the Laws of Virginia. 13 vols. University Press of Virginia, Charlottesville, Virginia.

Henry, John
1770Virginia. Available online at http://www.loc.gov/maps/collections

Herrmann, Augustine
1670Virginia and Maryland in 1670. Available online at
http://www.loc.gov/maps/collections

Hodges, Mary Ellen N., and Charles T. Hodges, editors
1994Paspahegh Archaeology: Data Recovery Investigations of Site 44JC308 at The Governor's Land at Two Rivers, James City County, Virginia. Available at the Virginia Department of Historic Resources archives.

Humphreys, A. A.
1862Map of Williamsburg to White House. National Archives, College Park, Maryland

James City County
1768-1769 Tax Lists. Rockefeller Library, Colonial Williamsburg Foundation, Williamsburg, Virginia.

James City County Government
1984Where America Began: James City County 1634-1984. James City County Board of Supervisors, Williamsburg, Virginia.

Jefferson, Thomas
1787A Map of the Country between Albemarle Sound and Lake Erie. Available online at http://www.loc.gov/maps/collections

Kingsbury, Susan M.
1906-1935 Records of the Virginia Company of London. 4 vols. Available at the Library of Congress, Washington, D.C.

Long, E. B.
1987The Civil War Day By Day, An Almanac. Da Capo Press, Inc., New York, New York.

Madison, James
1807Map of Virginia. Virginia Department of Historic Resources, Richmond, Virginia.

McAvoy, Joseph M., and Lynn D. McAvoy
1997 "Archaeological Investigations of Site 44SX202, Cactus Hill, Sussex County, Virginia." Research Report Series No. 8, Virginia Department of Historic Resources.

McCary, Ben C.
1951 "A Workshop of Early Man in Dinwiddie County, Virginia." American Antiquity 17(1).

1975"The Williamson Paleoindian Site, Dinwiddie County, Virginia." The Chesopiean 13(3-4).

1983"The Paleoindian in Virginia." Archeological Society of Virginia Quarterly Bulletin 38(1).

McCartney, Martha.
1985"Seventeenth Century Apartheid: The Suppression and Containment of Indians in Colonial Virginia." Journal of Middle Atlantic Archaeology 1:51-80.

McIlwaine, H. R., ed.
1924Minutes of Council and General Court of Colonial Virginia. The Library Board, Richmond, Virginia. Reprinted 1934, 1979.

Mouer, Lloyd Daniel
1990"The Archaic to Woodland Transition" in The Piedmont and Coastal Plain Sections of the James River Valley, Virginia. Ph.D. dissertation, University of Pittsburgh.

National Park Service
1990National Register of Historic Places Bulletin 15: How to Apply the National Register of Historic Places Criteria for Evaluation. Available online at http://www.nps.gov

Natural Resources Conservation Service
2018Online soils data. Available online at http://soils.usda.gov/.

Nugent, Nell Marion (ed.)
1969-1979 Cavaliers and Pioneers: Abstracts of Virginia Land Patents and Grants. 3 vols. Genealogical Publishing Company, Baltimore, Maryland.

Reps, John W.
1972Tidewater Towns: City Planning in Colonial Virginia and Maryland. University Press of Virginia, Charlottesville, Virginia.

Rice, Howard C. and Ann S. K. Brown
1972The American Campaigns of Rochambeau's Army. 2 vols. Princeton University Press, Princeton, New Jersey.

Robinson, W. Stitt.
1957Mother Earth – Land Grants in Virginia 1607 – 1699. Virginia 350th Anniversary Celebration Committee, Williamsburg, Virginia.

Swift, J. G.
1818Untitled map of Yorktown and the Peninsula. Virginia Department of Historic Resources, Richmond, Virginia.

Turner, E. Randolph, III
1989"Paleoindian Settlement Patterns and Population Distribution in Virginia. In Paleoindian Research in Virginia: A Synthesis." edited by J. Mark Wittkofski and Theodore R. Reinhart, Special Publication No. 19 of the Archeological Society of Virginia.

United States Geological Survey
1917Toano quadrangle sheet. Available online at http://historicalmaps.arcgis.com/usgs/

1953Toano quadrangle sheet. Available online at http://historicalmaps.arcgis.com/usgs/

1965Toano quadrangle sheet. Available online at http://historicalmaps.arcgis.com/usgs/

1972Toano quadrangle sheet. Available online at http://historicalmaps.arcgis.com/usgs/

1986Toano quadrangle sheet. Available online at http://historicalmaps.arcgis.com/usgs/

United States War Department (U.S.W.D.)
1891The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies. Prepared by Lt. Col. Robert N. Scott and compiled by George B. Davies, Leslie J. Perry and Joseph W. Kirkley. Series I, Vol. XVIII. U. S. Government Printing Office, Washington, D. C.

Virginia Department of Historic Resources
2017Guidelines for Conducting Historic Resources Survey in Virginia. Available at the Virginia Department of Historic Resources, Richmond, Virginia.

Yarnell, Richard A.
1976"Early Plant Husbandry in Eastern North America." In Cultural Change and Continuity: Essays in Honor of James Bennett Griffin, edited by Charles E. Cleland.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Erin Moyer
Organization/Company: The Ottery Group
Photographic Media: *No Data*
Survey Date: 1/8/2007
Dhr Library Report Number: *No Data*
Project Staff/Notes:

Completion of Architectural Documentation by the Ottery Group, Inc.

Event Type: Survey:Phase I/Reconnaissance

Project Review File Number: *No Data*
Investigator: Stephen Del Sordo
Organization/Company: DHR
Photographic Media: Film
Survey Date: 1/1/2000
Dhr Library Report Number: *No Data*
Project Staff/Notes:

VDHR/James City County 10/99-12/00; MAAR Associates, Inc., P.O. Box 655, Newark, DE (302)996-0713; Stephen Del Sordo, Surveyor

1999-2000 Cost Share survey project - initial survey of the property

Bibliographic Information

Bibliography:

No Data

Property Notes:

No Data

Snapshot

Date Generated: June 05, 2024

Site Name: No Data
Site Classification: Terrestrial, open air
Year(s): 1200 B.C.E - 1606 C.E
Site Type(s): Camp, temporary
Other DHR ID: No Data
Temporary Designation: No Data

Site Evaluation Status
Not Evaluated

Locational Information

USGS Quad: TOANO
County/Independent City: James City (County)
Physiographic Province: No Data
Elevation: No Data
Aspect: No Data
Drainage: No Data
Slope: No Data
Acreage: No Data
Landform: Other
Ownership Status: No Data
Government Entity Name: No Data

Site Components

Component 1

Category: Domestic
Site Type: Camp, temporary
Cultural Affiliation: Native American
Cultural Affiliation Details: No Data
DHR Time Period: Early Woodland, Late Woodland, Middle Woodland
Start Year: -1200
End Year: 1606
Comments: Limited Activity Site

Bibliographic Information

Bibliography:
No Data
Informant Data:
No Data

Archaeological site data is protected under the Archaeological Resource Protection Act (ARPA 1979).

CRM Events

Event Type: Survey:Phase I/Reconnaissance

Project Staff/Notes:

No Data

Project Review File Number: No Data

Sponsoring Organization: No Data

Organization/Company: Unknown (DSS)

Investigator: Colonial Williamsburg Found. (CWF)

Survey Date: 6/14/1985

Survey Description:

Shovel tests on this low terrace revealed a scatter of FCR and prehistoric ceramics. Site os unplowed although on old roadbed cuts through the southwest portions of the site.

Current Land Use	Date of Use	Comments
Forest	*No Data*	Site is unplowed and wooded; partially disturbed by a roadbed.

Threats to Resource: No Data

Site Conditions: Site Condition Unknown

Survey Strategies: Subsurface Testing

Specimens Collected: No

Specimens Observed, Not Collected: No

Artifacts Summary and Diagnostics:

1 small side notched wuartz projectile point; 1 knotted net-impressed, crushed quartz and quartzite temper ceramic sherd 1 quartz fcr, 1 knotted net-impressed, shell-tempered ceramic sherd, 1 Knotted ner-impressed, crushed quartz and quartzite temperceramic sherd.

Summary of Specimens Observed, Not Collected:

No Data

Current Curation Repository: No Data

Permanent Curation Repository: No Data

Field Notes: No

Field Notes Repository: No Data

Photographic Media: No Data

Survey Reports: No Data

Survey Report Information:

Physiographic location of site very similar to prehistoric site locations identified in the "P{hase I Archaeological Reconnaissance of the Proposed Route 199 Project CWF, 1985

Survey Report Repository: CWF

DHR Library Reference Number: No Data

Significance Statement: No Data

Surveyor's Eligibility Recommendations: No Data

Surveyor's NR Criteria Recommendations, : No Data

Surveyor's NR Criteria Considerations: No Data

HURT & PROFFITT

June 24, 2024

Hedera Solar, LLC
Ester Rekhelman
321 East Main St., Suite 500
Charlottesville, VA 22902

Re: Additional field reconnaissance to identify potential graves at the Hedera Solar site, James City County, Virginia. H&P Project #: 20240881.

Dear Ms. Rekhelman:

On behalf of Hedera Solar, LLC, Hurt & Proffitt (H&P) has completed additional field reconnaissance to identify potential graves at the Hedera Solar site in James City County, Virginia. The project was completed by an archaeologist who meets or exceeds the qualifications contained in the Secretary of the Interior's Professional Qualifications Standards (48 Federal Register 44738-44739).

The 100-acre project development site lies approximately 3 miles northwest of the unincorporated community of Toano, Virginia and contains one parcel (Parcel ID 1110100013). The property is situated with Richmond Road (Rt 60) bordering it to the north, Edwards Swamp to the west along with woods to the east and south.

H&P completed a Phase 1a Risk Assessment on June 4, 2024, and recorded the disturbed nature of the project area from logging. No evidence of graves was noted during the field reconnaissance. However, Hexagon Energy was later informed by one of the neighbors that two gravesites or family grouping of gravesites are located on the property. The neighbor also gave Hexagon a rough location of where they were located.

Based on this information, an H&P archaeologist revisited the site to thoroughly examine the area where the graves might be located to look for any signs of grave markers, depressions and ornamental vegetation that could represent unmarked graves.

While in the field, the H&P archaeologist spoke with a neighbor who told him that there are two cemeteries in the project area, one for the Robinson family and one for the White family. The neighbor also showed him the approximate area where they are located and said some were marked but not with headstones. Unfortunately, no evidence of graves was observed in that area which showed signs of logging. In addition, thick brambles and woods covered the area (Figures 1-2).

H&P recommends first that Hedera Solar, LLC should attempt to design the project to avoid the area indicated in red in Figure 1 where the cemeteries are most likely located. If possible, a further buffer of 100 feet should be placed around that location beyond the red oval. If there is a chance that the likely cemetery location would be directly impacted by future project development, H&P recommends that the Phase 1b archaeological survey include shovel testing and additional

reconnaissance in that location. This work would be in addition to incorporating chain of title and funeral home research currently being undertaken by the client into the final cultural resources results.

If you should have any questions or comments, please do not hesitate to contact us.

Sincerely,
HURT & PROFFITT

Dwayne Pickett
Assistant Director of Cultural Resources



Figure 1. Possible location of cemeteries.



Figure 2. Area where cemeteries might be located.

Appendix F: Health and Safety Report

Enclosed.

NC CLEAN ENERGY
TECHNOLOGY CENTER

Health and Safety Impacts of Solar Photovoltaics

MAY 2017



NC STATE UNIVERSITY

Health and Safety Impacts of Solar Photovoltaics

The increasing presence of utility-scale solar photovoltaic (PV) systems (sometimes referred to as solar farms) is a rather new development in North Carolina's landscape. Due to the new and unknown nature of this technology, it is natural for communities near such developments to be concerned about health and safety impacts. Unfortunately, the quick emergence of utility-scale solar has cultivated fertile grounds for myths and half-truths about the health impacts of this technology, which can lead to unnecessary fear and conflict.

Photovoltaic (PV) technologies and solar inverters are not known to pose any significant health dangers to their neighbors. The most important dangers posed are increased highway traffic during the relative short construction period and dangers posed to trespassers of contact with high voltage equipment. This latter risk is mitigated by signage and the security measures that industry uses to deter trespassing. As will be discussed in more detail below, risks of site contamination are much less than for most other industrial uses because PV technologies employ few toxic chemicals and those used are used in very small quantities. Due to the reduction in the pollution from fossil-fuel-fired electric generators, the overall impact of solar development on human health is overwhelmingly positive. This pollution reduction results from a partial replacement of fossil-fuel fired generation by emission-free PV-generated electricity, which reduces harmful sulfur dioxide (SO_2), nitrogen oxides (NO_x), and fine particulate matter ($PM_{2.5}$). Analysis from the National Renewable Energy Laboratory and the Lawrence Berkeley National Laboratory, both affiliates of the U.S. Department of Energy, estimates the health-related air quality benefits to the southeast region from solar PV generators to be worth 8.0 ¢ per kilowatt-hour of solar generation.[1] This is in addition to the value of the electricity and suggests that the air quality benefits of solar are worth more than the electricity itself.

Even though we have only recently seen large-scale installation of PV technologies, the technology and its potential impacts have been studied since the 1950s. A combination of this solar-specific research and general scientific research has led to the scientific community having a good understanding of the science behind potential health and safety impacts of solar energy. This paper utilizes the latest scientific literature and knowledge of solar practices in N.C. to address the health and safety risks associated with solar PV technology. These risks are extremely small, far less than those associated with common activities such as driving a car, and vastly outweighed by health benefits of the generation of clean electricity.

This paper addresses the potential health and safety impacts of solar PV development in North Carolina, organized into the following four categories:

(1) Hazardous Materials
(2) Electromagnetic Fields (EMF)
(3) Electric Shock and Arc Flash
(4) Fire Safety

1. Hazardous Materials

One of the more common concerns towards solar is that the panels (referred to as "modules" in the solar industry) consist of toxic materials that endanger public health. However, as shown in this section, solar energy systems may contain small amounts of toxic materials, but these materials do not endanger public health. To understand potential toxic hazards coming from a solar project, one must understand system installation, materials used, the panel end-of-life protocols, and system operation. This section will examine these aspects of a solar farm and the potential for toxicity impacts in the following subsections:

(1.2) Project Installation/Construction
(1.2) System Components
    1.2.1 Solar Panels: Construction and Durability
    1.2.2 Photovoltaic technologies
        (a) Crystalline Silicon
        (b) Cadmium Telluride (CdTe)
        (c) CIS/CIGS
    1.2.3 Panel End of Life Management
    1.2.4 Non-panel System Components
(1.3) Operations and Maintenance

1.1 Project Installation/Construction

The system installation, or construction, process does not require toxic chemicals or processes. The site is mechanically cleared of large vegetation, fences are constructed, and the land is surveyed to layout exact installation locations. Trenches for underground wiring are dug and support posts are driven into the ground. The solar panels are bolted to steel and aluminum support structures and wired together. Inverter pads are installed, and an inverter and transformer are installed on each pad. Once everything is connected, the system is tested, and only then turned on.



Figure 1: Utility-scale solar facility (5 MW_{AC}) located in Catawba County. Source: Strata Solar

1.2 System Components

1.2.1 Solar Panels: Construction and Durability

Solar PV panels typically consist of glass, polymer, aluminum, copper, and semiconductor materials that can be recovered and recycled at the end of their useful life.[2] Today there are two PV technologies used in PV panels at utility-scale solar facilities, silicon, and thin film. As of 2016, all thin film used in North Carolina solar facilities are cadmium telluride (CdTe) panels from the US manufacturer First Solar, but there are other thin film PV panels available on the market, such as Solar Frontier's CIGS panels. Crystalline silicon technology consists of silicon wafers which are made into cells and assembled into panels, thin film technologies consist of thin layers of semiconductor material deposited onto glass, polymer or metal substrates. While there are differences in the components and manufacturing processes of these two types of solar technologies, many aspects of their PV panel construction are very similar. Specifics about each type of PV chemistry as it relates to toxicity are covered in subsections a, b, and c in section 1.2.2; on crystalline silicon, cadmium telluride, and CIS/CIGS respectively. The rest of this section applies equally to both silicon and thin film panels.

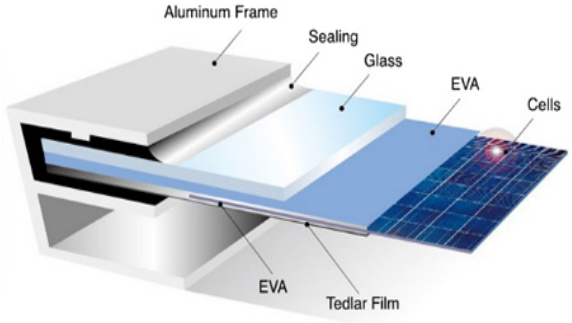


Figure 2: Components of crystalline silicon panels. The vast majority of silicon panels consist of a glass sheet on the topside with an aluminum frame providing structural support. Image Source: www.riteksolar.com.tw

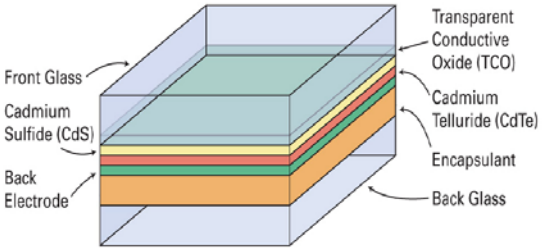


Figure 3: Layers of a common frameless thin-film panel (CdTe). Many thin film panels are frameless, including the most common thin-film panels, First Solar's CdTe. Frameless panels have protective glass on both the front and back of the panel. Layer thicknesses not to scale. Image Source: www.homepower.com

To provide decades of corrosion-free operation, PV cells in PV panels are encapsulated from air and moisture between two layers of plastic. The encapsulation layers are protected on the top with a layer of tempered glass and on the backside with a polymer sheet. Frameless modules include a protective layer of glass on the rear of the panel, which may also be tempered. The plastic ethylene-vinyl acetate (EVA) commonly provides the cell encapsulation. For decades, this same material has been used between layers of tempered glass to give car windshields and hurricane windows their great strength. In the same way that a car windshield cracks but stays intact, the EVA layers in PV panels keep broken panels intact (see Figure 4). Thus, a damaged module does not generally create small pieces of debris; instead, it largely remains together as one piece.



Figure 4: The mangled PV panels in this picture illustrate the nature of broken solar panels; the glass cracks but the panel is still in one piece. Image Source: http://img.alibaba.com/photo/115259576/broken_solar_panel.jpg

PV panels constructed with the same basic components as modern panels have been installed across the globe for well over thirty years.[3] The long-term durability and performance demonstrated over these decades, as well as the results of accelerated lifetime testing, helped lead to an industry-standard 25-year power production warranty for PV panels. These power warranties warrant a PV panel to produce at least 80% of their original nameplate production after 25 years of use. A recent SolarCity and DNV GL study reported that today's quality PV panels should be expected to reliably and efficiently produce power for thirty-five years.[4]

Local building codes require all structures, including ground mounted solar arrays, to be engineered to withstand anticipated wind speeds, as defined by the local wind speed requirements. Many racking products are available in versions engineered for wind speeds of up to 150 miles per hour, which is significantly higher than the wind speed requirement anywhere in North Carolina. The strength of PV mounting structures were demonstrated during Hurricane Sandy in 2012 and again during Hurricane Matthew in 2016. During Hurricane Sandy, the many large-scale solar facilities in New Jersey and New York at that time suffered only minor damage.[5] In the fall of 2016, the US and Caribbean experienced destructive winds and torrential rains from Hurricane Matthew, yet one leading solar tracker manufacturer reported that their numerous systems in the impacted area received zero damage from wind or flooding.[6]

In the event of a catastrophic event capable of damaging solar equipment, such as a tornado, the system will almost certainly have property insurance that will cover the cost to cleanup and repair the project. It is in the best interest of the system owner to protect their investment against such risks. It is also in their interest to get the project repaired and producing full power as soon as possible. Therefore, the investment in adequate insurance is a wise business practice for the system owner. For the same

reasons, adequate insurance coverage is also generally a requirement of the bank or firm providing financing for the project.

1.2.2 Photovoltaic (PV) Technologies

a. Crystalline Silicon

This subsection explores the toxicity of silicon-based PV panels and concludes that they do not pose a material risk of toxicity to public health and safety. Modern crystalline silicon PV panels, which account for over 90% of solar PV panels installed today, are, more or less, a commodity product. The overwhelming majority of panels installed in North Carolina are crystalline silicon panels that are informally classified as Tier I panels. Tier I panels are from well-respected manufacturers that have a good chance of being able to honor warranty claims. Tier I panels are understood to be of high quality, with predictable performance, durability, and content. Well over 80% (by weight) of the content of a PV panel is the tempered glass front and the aluminum frame, both of which are common building materials. Most of the remaining portion are common plastics, including polyethylene terephthalate in the backsheet, EVA encapsulation of the PV cells, polyphenyl ether in the junction box, and polyethylene insulation on the wire leads. The active, working components of the system are the silicon photovoltaic cells, the small electrical leads connecting them together, and to the wires coming out of the back of the panel. The electricity generating and conducting components makeup less than 5% of the weight of most panels. The PV cell itself is nearly 100% silicon, and silicon is the second most common element in the Earth's crust. The silicon for PV cells is obtained by high-temperature processing of quartz sand (SiO_2) that removes its oxygen molecules. The refined silicon is converted to a PV cell by adding extremely small amounts of boron and phosphorus, both of which are common and of very low toxicity.

The other minor components of the PV cell are also generally benign; however, some contain lead, which is a human toxicant that is particularly harmful to young children. The minor components include an extremely thin antireflective coating (silicon nitride or titanium dioxide), a thin layer of aluminum on the rear, and thin strips of silver alloy that are screen-printed on the front and rear of cell.[7] In order for the front and rear electrodes to make effective electrical contact with the proper layer of the PV cell, other materials (called glass frit) are mixed with the silver alloy and then heated to etch the metals into the cell. This glass frit historically contains a small amount of lead (Pb) in the form of lead oxide. The 60 or 72 PV cells in a PV panel are connected by soldering thin solder-covered copper tabs from the back of one cell to the front of the next cell. Traditionally a tin-based solder containing some lead (Pb) is used, but some manufacturers have switched to lead-free solder. The glass frit and/or the solder may contain trace amounts of other metals, potentially including some with human toxicity such as cadmium. However, testing to simulate the potential for leaching from broken panels, which is discussed in more detail below, did not find a potential toxicity threat from these trace elements. Therefore, the tiny amount of lead in the grass frit and the solder is the only part of silicon PV panels with a potential to create a negative health impact. However, as described below, the very limited amount of lead involved and its strong physical and chemical attachment to other components of the PV panel means that even in worst-case scenarios the health hazard it poses is insignificant.

As with many electronic industries, the solder in silicon PV panels has historically been a lead-based solder, often 36% lead, due to the superior properties of such solder. However, recent advances in lead-free solders have spurred a trend among PV panel manufacturers to reduce or remove the lead in their panels. According to the 2015 Solar Scorecard from the Silicon Valley Toxics Coalition, a group that tracks environmental responsibility of photovoltaic panel manufacturers, fourteen companies (increased from twelve companies in 2014) manufacture PV panels certified to meet the European Restriction of

Hazardous Substances (RoHS) standard. This means that the amount of cadmium and lead in the panels they manufacture fall below the RoHS thresholds, which are set by the European Union and serve as the world's de facto standard for hazardous substances in manufactured goods.[8] The Restriction of Hazardous Substances (RoHS) standard requires that the maximum concentration found in any homogenous material in a produce is less than 0.01% cadmium and less than 0.10% lead, therefore, any solder can be no more than 0.10% lead.[9]

While some manufacturers are producing PV panels that meet the RoHS standard, there is no requirement that they do so because the RoHS Directive explicitly states that the directive does not apply to photovoltaic panels.[10] The justification for this is provided in item 17 of the current RoHS Directive: "The development of renewable forms of energy is one of the Union's key objectives, and the contribution made by renewable energy sources to environmental and climate objectives is crucial. Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources (4) recalls that there should be coherence between those objectives and other Union environmental legislation. Consequently, this Directive should not prevent the development of renewable energy technologies that have no negative impact on health and the environment and that are sustainable and economically viable."

The use of lead is common in our modern economy. However, only about 0.5% of the annual lead consumption in the U.S. is for electronic solder for all uses; PV solder makes up only a tiny portion of this 0.5%. Close to 90% of lead consumption in the US is in batteries, which do not encapsulate the pounds of lead contained in each typical automotive battery. This puts the lead in batteries at great risk of leaching into the environment. Estimates for the lead in a single PV panel with lead-based solder range from 1.6 to 24 grams of lead, with 13g (less than half of an ounce) per panel seen most often in the literature.[11] At 13 g/panel[12], each panel contains one-half of the lead in a typical 12-gauge shotgun shell. This amount equates to roughly 1/750th of the lead in a single car battery. In a panel, it is all durably encapsulated from air or water for the full life of the panel.[14]

As indicated by their 20 to 30-year power warranty, PV modules are designed for a long service life, generally over 25 years. For a panel to comply with its 25-year power warranty, its internal components, including lead, must be sealed from any moisture. Otherwise, they would corrode and the panel's output would fall below power warranty levels. Thus, the lead in operating PV modules is not at risk of release to the environment during their service lifetime. In extreme experiments, researchers have shown that lead can leach from crushed or pulverized panels.[15, 16] However, more real-world tests designed to represent typical trash compaction that are used to classify waste as hazardous or non-hazardous show no danger from leaching.[17, 18] For more information about PV panel end-of-life, see the Panel Disposal section.

As illustrated throughout this section, silicon-based PV panels do not pose a material threat to public health and safety. The only aspect of the panels with potential toxicity concerns is the very small amount of lead in some panels. However, any lead in a panel is well sealed from environmental exposure for the operating lifetime of the solar panel and thus not at risk of release into the environment.

b. Cadmium Telluride (CdTe) PV Panels

This subsection examines the components of a cadmium telluride (CdTe) PV panel. Research demonstrates that they pose negligible toxicity risk to public health and safety while significantly reducing the public's exposure to cadmium by reducing coal emissions. As of mid-2016, a few hundred MWs of

cadmium telluride (CdTe) panels, all manufactured by the U.S. company First Solar, have been installed in North Carolina.

Questions about the potential health and environmental impacts from the use of this PV technology are related to the concern that these panels contain cadmium, a toxic heavy metal. However, scientific studies have shown that cadmium telluride differs from cadmium due to its high chemical and thermal stability.[19] Research has shown that the tiny amount of cadmium in these panels does not pose a health or safety risk.[20] Further, there are very compelling reasons to welcome its adoption due to reductions in unhealthy pollution associated with burning coal. Every GWh of electricity generated by burning coal produces about 4 grams of cadmium air emissions.[21] Even though North Carolina produces a significant fraction of our electricity from coal, electricity from solar offsets much more natural gas than coal due to natural gas plants being able to adjust their rate of production more easily and quickly. If solar electricity offsets 90% natural gas and 10% coal, each 5-megawatt (5 MW_{AC}, which is generally 7 MW_{DC}) CdTe solar facility in North Carolina keeps about 157 grams, or about a third of a pound, of cadmium *out of* our environment.[22, 23]

Cadmium is toxic, but all the approximately 7 grams of cadmium in one CdTe panel is in the form of a chemical compound cadmium telluride,[24] which has $1/100^{th}$ the toxicity of free cadmium.[25] Cadmium telluride is a very stable compound that is non-volatile and non-soluble in water. Even in the case of a fire, research shows that less than 0.1% of the cadmium is released when a CdTe panel is exposed to fire. The fire melts the glass and encapsulates over 99.9% of the cadmium in the molten glass.[27]

It is important to understand the source of the cadmium used to manufacture CdTe PV panels. The cadmium is a byproduct of zinc and lead refining. The element is collected from emissions and waste streams during the production of these metals and combined with tellurium to create the CdTe used in PV panels. If the cadmium were not collected for use in the PV panels or other products, it would otherwise either be stockpiled for future use, cemented and buried, or disposed of.[28] Nearly all the cadmium in old or broken panels can be recycled which can eventually serve as the primary source of cadmium for new PV panels.[29]

Similar to silicon-based PV panels, CdTe panels are constructed of a tempered glass front, one instead of two clear plastic encapsulation layers, and a rear heat strengthened glass backing (together >98% by weight). The final product is built to withstand exposure to the elements without significant damage for over 25 years. While not representative of damage that may occur in the field or even at a landfill, laboratory evidence has illustrated that when panels are ground into a fine powder, very acidic water is able to leach portions of the cadmium and tellurium,[30] similar to the process used to recycle CdTe panels. Like many silicon-based panels, CdTe panels are reported (as far back ask 1998[31]) to pass the EPA's Toxic Characteristic Leaching Procedure (TCLP) test, which tests the potential for crushed panels in a landfill to leach hazardous substances into groundwater.[32] Passing this test means that they are classified as non-hazardous waste and can be deposited in landfills.[33, 34] For more information about PV panel end-of-life, see the Panel Disposal section.

There is also concern of environmental impact resulting from potential catastrophic events involving CdTe PV panels. An analysis of worst-case scenarios for environmental impact from CdTe PV panels, including earthquakes, fires, and floods, was conducted by the University of Tokyo in 2013. After reviewing the extensive international body of research on CdTe PV technology, their report concluded, "Even in the worst-case scenarios, it is unlikely that the Cd concentrations in air and sea water will exceed the environmental regulation values."[35] In a worst-case scenario of damaged panels abandoned on the ground, insignificant amounts of cadmium will leach from the panels. This is because this scenario is

much less conducive (larger module pieces, less acidity) to leaching than the conditions of the EPA's TCLP test used to simulate landfill conditions, which CdTe panels pass.[36]

First Solar, a U.S. company, and the only significant supplier of CdTe panels, has a robust panel take-back and recycling program that has been operating commercially since 2005.[37] The company states that it is "committed to providing a commercially attractive recycling solution for photovoltaic (PV) power plant and module owners to help them meet their module (end of life) EOL obligation simply, cost-effectively and responsibly." First Solar global recycling services to their customers to collect and recycle panels once they reach the end of productive life whether due to age or damage. These recycling service agreements are structured to be financially attractive to both First Solar and the solar panel owner. For First Solar, the contract provides the company with an affordable source of raw materials needed for new panels and presumably a diminished risk of undesired release of Cd. The contract also benefits the solar panel owner by allowing them to avoid tipping fees at a waste disposal site. The legal contract helps provide peace of mind by ensuring compliance by both parties when considering the continuing trend of rising disposal costs and increasing regulatory requirements.

c. CIS/CIGS and other PV technologies

Copper indium gallium selenide PV technology, often referred to as CIGS, is the second most common type of thin-film PV panel but a distant second behind CdTe. CIGS cells are composed of a thin layer of copper, indium, gallium, and selenium on a glass or plastic backing. None of these elements are very toxic, although selenium is a regulated metal under the Federal Resource Conservation and Recovery Act (RCRA).[38] The cells often also have an extremely thin layer of cadmium sulfide that contains a tiny amount of cadmium, which is toxic. The promise of high efficiency CIGS panels drove heavy investment in this technology in the past. However, researchers have struggled to transfer high efficiency success in the lab to low-cost full-scale panels in the field.[39] Recently, a CIGS manufacturer based in Japan, Solar Frontier, has achieved some market success with a rigid, glass-faced CIGS module that competes with silicon panels. Solar Frontier produces the majority of CIS panels on the market today.[40] Notably, these panels are RoHS compliant,[41] thus meeting the rigorous toxicity standard adopted by the European Union even thought this directive exempts PV panels. The authors are unaware of any completed or proposed utility-scale system in North Carolina using CIS/CIGS panels.

1.2.3 Panel End-of-Life Management

Concerns about the volume, disposal, toxicity, and recycling of PV panels are addressed in this subsection. To put the volume of PV waste into perspective, consider that by 2050, when PV systems installed in 2020 will reach the end of their lives, it is estimated that the global annual PV panel waste tonnage will be 10% of the 2014 global e-waste tonnage.[42] In the U.S., end-of-life disposal of solar products is governed by the Federal Resource Conservation and Recovery Act (RCRA), as well as state policies in some situations. RCRA separates waste into hazardous (not accepted at ordinary landfill) and solid waste (generally accepted at ordinary landfill) based on a series of rules. According to RCRA, the way to determine if a PV panel is classified as hazardous waste is the Toxic Characteristic Leaching Procedure (TCLP) test. This EPA test is designed to simulate landfill disposal and determine the risk of hazardous substances leaching out of the landfill.[43, 44, 45] Multiple sources report that most modern PV panels (both crystalline silicon and cadmium telluride) pass the TCLP test.[46, 47] Some studies found that some older (1990s) crystalline silicon panels, and perhaps some newer crystalline silicon panels (specifics are not given about vintage of panels tested), do not pass the lead (Pb) leachate limits in the TCLP test.[48, 49]

The test begins with the crushing of a panel into centimeter-sized pieces. The pieces are then mixed in an acid bath. After tumbling for eighteen hours, the fluid is tested for forty hazardous substances that all must be below specific threshold levels to pass the test. Research comparing TCLP conditions to conditions of damaged panels in the field found that simulated landfill conditions provide overly conservative estimates of leaching for field-damaged panels.[50] Additionally, research in Japan has found no detectable Cd leaching from cracked CdTe panels when exposed to simulated acid rain.[51]

Although modern panels can generally be landfilled, they can also be recycled. Even though recent waste volume has not been adequate to support significant PV-specific recycling infrastructure, the existing recycling industry in North Carolina reports that it recycles much of the current small volume of broken PV panels. In an informal survey conducted by the NC Clean Energy Technology Center survey in early 2016, seven of the eight large active North Carolina utility-scale solar developers surveyed reported that they send damaged panels back to the manufacturer and/or to a local recycler. Only one developer reported sending damaged panels to the landfill.

The developers reported at that time that they are usually paid a small amount per panel by local recycling firms. In early 2017, a PV developer reported that a local recycler was charging a small fee per panel to recycle damaged PV panels. The local recycling firm known to authors to accept PV panels described their current PV panel recycling practice as of early 2016 as removing the aluminum frame for local recycling and removing the wire leads for local copper recycling. The remainder of the panel is sent to a facility for processing the non-metallic portions of crushed vehicles, referred to as "fluff" in the recycling industry.[52] This processing within existing general recycling plants allows for significant material recovery of major components, including glass which is 80% of the module weight, but at lower yields than PV-specific recycling plants. Notably almost half of the material value in a PV panel is in the few grams of silver contained in almost every PV panel produced today. In the long-term, dedicated PV panel recycling plants can increase treatment capacities and maximize revenues resulting in better output quality and the ability to recover a greater fraction of the useful materials.[53] PV-specific panel recycling technologies have been researched and implemented to some extent for the past decade, and have been shown to be able to recover over 95% of PV material (semiconductor) and over 90% of the glass in a PV panel.[54]

A look at global PV recycling trends hints at the future possibilities of the practice in our country. Europe installed MW-scale volumes of PV years before the U.S. In 2007, a public-private partnership between the European Union and the solar industry set up a voluntary collection and recycling system called PV CYCLE. This arrangement was later made mandatory under the EU's WEEE directive, a program for waste electrical and electronic equipment.[55] Its member companies (PV panel producers) fully finance the association. This makes it possible for end-users to return the member companies' defective panels for recycling at any of the over 300 collection points around Europe without added costs. Additionally, PV CYCLE will pick up batches of 40 or more used panels at no cost to the user. This arrangement has been very successful, collecting and recycling over 13,000 tons by the end of 2015.[56]

In 2012, the WEEE Directive added the end-of-life collection and recycling of PV panels to its scope.[57] This directive is based on the principle of extended-producer-responsibility. It has a global impact because producers that want to sell into the EU market are legally responsible for end-of-life management. Starting in 2018, this directive targets that 85% of PV products "put in the market" in Europe are recovered and 80% is prepared for reuse and recycling.

The success of the PV panel collection and recycling practices in Europe provides promise for the future of recycling in the U.S. In mid-2016, the US Solar Energy Industry Association (SEIA) announced that they are starting a national solar panel recycling program with the guidance and support of many

leading PV panel producers.[58] The program will aggregate the services offered by recycling vendors and PV manufacturers, which will make it easier for consumers to select a cost-effective and environmentally responsible end-of-life management solution for their PV products. According to SEIA, they are planning the program in an effort to make the entire industry landfill-free. In addition to the national recycling network program, the program will provide a portal for system owners and consumers with information on how to responsibly recycle their PV systems.

While a cautious approach toward the potential for negative environmental and/or health impacts from retired PV panels is fully warranted, this section has shown that the positive health impacts of reduced emissions from fossil fuel combustion from PV systems more than outweighs any potential risk. Testing shows that silicon and CdTe panels are both safe to dispose of in landfills, and are also safe in worst case conditions of abandonment or damage in a disaster. Additionally, analysis by local engineers has found that the current salvage value of the equipment in a utility scale PV facility generally exceeds general contractor estimates for the cost to remove the entire PV system.[59, 60, 61]

1.2.4 Non-Panel System Components (racking, wiring, inverter, transformer)

While previous toxicity subsections discussed PV panels, this subsection describes the non-panel components of utility-scale PV systems and investigates any potential public health and safety concerns. The most significant non-panel component of a ground-mounted PV system is the mounting structure of the rows of panels, commonly referred to as "racking". The vertical post portion of the racking is galvanized steel and the remaining above-ground racking components are either galvanized steel or aluminum, which are both extremely common and benign building materials. The inverters that make the solar generated electricity ready to send to the grid have weather-proof steel enclosures that protect the working components from the elements. The only fluids that they might contain are associated with their cooling systems, which are not unlike the cooling system in a computer. Many inverters today are RoHS compliant.

The electrical transformers (to boost the inverter output voltage to the voltage of the utility connection point) do contain a liquid cooling oil. However, the fluid used for that function is either a non-toxic mineral oil or a biodegradable non-toxic vegetable oil, such as BIOTEMP from ABB. These vegetable transformer oils have the additional advantage of being much less flammable than traditional mineral oils. Significant health hazards are associated with old transformers containing cooling oil with toxic PCBs. Transfers with PCB-containing oil were common before PCBs were outlawed in the U.S. in 1979. PCBs still exist in older transformers in the field across the country.

Other than a few utility research sites, there are no batteries on- or off-site associated with utility-scale solar energy facilities in North Carolina, avoiding any potential health or safety concerns related to battery technologies. However, as battery technologies continue to improve and prices continue to decline we are likely to start seeing some batteries at solar facilities. Lithium ion batteries currently dominate the world utility-scale battery market, which are not very toxic. No non-panel system components were found to pose any health or environmental dangers.

1.4 Operations and Maintenance – Panel Washing and Vegetation Control

Throughout the eastern U.S., the climate provides frequent and heavy enough rain to keep panels adequately clean. This dependable weather pattern eliminates the need to wash the panels on a regular basis. Some system owners may choose to wash panels as often as once a year to increase production, but most in N.C. do not regularly wash any PV panels. Dirt build up over time may justify panel washing a few times over the panels' lifetime; however, nothing more than soap and water are required for this activity.

The maintenance of ground-mounted PV facilities requires that vegetation be kept low, both for aesthetics and to avoid shading of the PV panels. Several approaches are used to maintain vegetation at NC solar facilities, including planting of limited-height species, mowing, weed-eating, herbicides, and grazing livestock (sheep). The following descriptions of vegetation maintenance practices are based on interviews with several solar developers as well as with three maintenance firms that together are contracted to maintain well over 100 of the solar facilities in N.C. The majority of solar facilities in North Carolina maintain vegetation primarily by mowing. Each row of panels has a single row of supports, allowing sickle mowers to mow under the panels. The sites usually require mowing about once a month during the growing season. Some sites employ sheep to graze the site, which greatly reduces the human effort required to maintain the vegetation and produces high quality lamb meat.[62]

In addition to mowing and weed eating, solar facilities often use some herbicides. Solar facilities generally do not spray herbicides over the entire acreage; rather they apply them only in strategic locations such as at the base of the perimeter fence, around exterior vegetative buffer, on interior dirt roads, and near the panel support posts. Also unlike many row crop operations, solar facilities generally use only general use herbicides, which are available over the counter, as opposed to restricted use herbicides commonly used in commercial agriculture that require a special restricted use license. The herbicides used at solar facilities are primarily 2-4-D and glyphosate (Round-up®), which are two of the most common herbicides used in lawns, parks, and agriculture across the country. One maintenance firm that was interviewed sprays the grass with a class of herbicide known as a growth regulator in order to slow the growth of grass so that mowing is only required twice a year. Growth regulators are commonly used on highway roadsides and golf courses for the same purpose. A commercial pesticide applicator license is required for anyone other than the landowner to apply herbicides, which helps ensure that all applicators are adequately educated about proper herbicide use and application. The license must be renewed annually and requires passing of a certification exam appropriate to the area in which the applicator wishes to work. Based on the limited data available, it appears that solar facilities in N.C. generally use significantly less herbicides per acre than most commercial agriculture or lawn maintenance services.

2. Electromagnetic Fields (EMF)

PV systems do not emit any material during their operation; however, they do generate electromagnetic fields (EMF), sometimes referred to as radiation. EMF produced by electricity is non-ionizing radiation, meaning the radiation has enough energy to move atoms in a molecule around (experienced as heat), but not enough energy to remove electrons from an atom or molecule (ionize) or to damage DNA. As shown below, modern humans are all exposed to EMF throughout our daily lives without negative health impact. Someone outside of the fenced perimeter of a solar facility is not exposed to significant EMF from the solar facility. Therefore, there is no negative health impact from the EMF

produced in a solar farm. The following paragraphs provide some additional background and detail to support this conclusion.

Since the 1970s, some have expressed concern over potential health consequences of EMF from electricity, but no studies have ever shown this EMF to cause health problems.[63] These concerns are based on some epidemiological studies that found a slight increase in childhood leukemia associated with average exposure to residential power-frequency magnetic fields above 0.3 to 0.4 μT (microteslas) (equal to 3.0 to 4.0 mG (milligauss)). μT and mG are both units used to measure magnetic field strength. For comparison, the average exposure for people in the U.S. is one mG or 0.1 μT, with about 1% of the population with an average exposure in excess of 0.4 μT (or 4 mG).[64] These epidemiological studies, which found an association but not a causal relationship, led the World Health Organization's International Agency for Research on Cancer (IARC) to classify ELF magnetic fields as "possibly carcinogenic to humans". Coffee also has this classification. This classification means there is limited evidence but not enough evidence to designate as either a "probable carcinogen" or "human carcinogen". Overall, there is very little concern that ELF EMF damages public health. The only concern that does exist is for long-term exposure above 0.4 μT (4 mG) that may have some connection to increased cases of childhood leukemia. In 1997, the National Academies of Science were directed by Congress to examine this concern and concluded:

> "Based on a comprehensive evaluation of published studies relating to the effects of power-frequency electric and magnetic fields on cells, tissues, and organisms (including humans), the conclusion of the committee is that the current body of evidence does not show that exposure to these fields presents a human-health hazard. Specifically, no conclusive and consistent evidence shows that exposures to residential electric and magnetic fields produce cancer, adverse neurobehavioral effects, or reproductive and developmental effects."[65]

There are two aspects to electromagnetic fields, an electric field and a magnetic field. The electric field is generated by voltage and the magnetic field is generated by electric current, i.e., moving electrons. A task group of scientific experts convened by the World Health Organization (WHO) in 2005 concluded that there were no substantive health issues related to *electric* fields (0 to 100,000 Hz) at levels generally encountered by members of the public.[66] The relatively low voltages in a solar facility and the fact that electric fields are easily shielded (i.e., blocked) by common materials, such as plastic, metal, or soil means that there is no concern of negative health impacts from the electric fields generated by a solar facility. Thus, the remainder of this section addresses magnetic fields. Magnetic fields are not shielded by most common materials and thus can easily pass through them. Both types of fields are strongest close to the source of electric generation and weaken quickly with distance from the source.

The direct current (DC) electricity produced by PV panels produce stationary (0 Hz) electric and magnetic fields. Because of minimal concern about potential risks of stationary fields, little scientific research has examined stationary fields' impact on human health.[67] In even the largest PV facilities, the DC voltages and currents are not very high. One can illustrate the weakness of the EMF generated by a PV panel by placing a compass on an operating solar panel and observing that the needle still points north.

While the electricity throughout the majority of a solar site is DC electricity, the inverters convert this DC electricity to alternating current (AC) electricity matching the 60 Hz frequency of the grid. Therefore, the inverters and the wires delivering this power to the grid are producing non-stationary EMF, known as extremely low frequency (ELF) EMF, normally oscillating with a frequency of 60 Hz. This frequency is at the low-energy end of the electromagnetic spectrum. Therefore, it has less energy than

other commonly encountered types of non-ionizing radiation like radio waves, infrared radiation, and visible light.

The wide use of electricity results in background levels of ELF EMFs in nearly all locations where people spend time – homes, workplaces, schools, cars, the supermarket, etc. A person's average exposure depends upon the sources they encounter, how close they are to them, and the amount of time they spend there.[68] As stated above, the average exposure to magnetic fields in the U.S. is estimated to be around one mG or 0.1 μT, but can vary considerably depending on a person's exposure to EMF from electrical devices and wiring.[69] At times we are often exposed to much higher ELF magnetic fields, for example when standing three feet from a refrigerator the ELF magnetic field is 6 mG and when standing three feet from a microwave oven the field is about 50 mG.[70] The strength of these fields diminish quickly with distance from the source, but when surrounded by electricity in our homes and other buildings moving away from one source moves you closer to another. However, unless you are inside of the fence at a utility-scale solar facility or electrical substation it is impossible to get very close to the EMF sources. Because of this, EMF levels at the fence of electrical substations containing high voltages and currents are considered "generally negligible".[71, 72]

The strength of ELF-EMF present at the perimeter of a solar facility or near a PV system in a commercial or residential building is significantly lower than the typical American's average EMF exposure.[73, 74] Researchers in Massachusetts measured magnetic fields at PV projects and found the magnetic fields dropped to very low levels of 0.5 mG or less, and in many cases to less than background levels (0.2 mG), at distances of no more than nine feet from the residential inverters and 150 feet from the utility-scale inverters.[75] Even when measured within a few feet of the utility-scale inverter, the ELF magnetic fields were well below the International Commission on Non-Ionizing Radiation Protection's recommended magnetic field level exposure limit for the general public of 2,000 mG.[76] It is typical that utility scale designs locate large inverters central to the PV panels that feed them because this minimizes the length of wire required and shields neighbors from the sound of the inverter's cooling fans. Thus, it is rare for a large PV inverter to be within 150 feet of the project's security fence.

Anyone relying on a medical device such as pacemaker or other implanted device to maintain proper heart rhythm may have concern about the potential for a solar project to interfere with the operation of his or her device. However, there is no reason for concern because the EMF outside of the solar facility's fence is less than 1/1000 of the level at which manufacturers test for ELF EMF interference, which is 1,000 mG.[77] Manufacturers of potentially affected implanted devices often provide advice on electromagnetic interference that includes avoiding letting the implanted device get too close to certain sources of fields such as some household appliances, some walkie-talkies, and similar transmitting devices. Some manufacturers' literature does not mention high-voltage power lines, some say that exposure in public areas should not give interference, and some advise not spending extended periods of time close to power lines.[78]

3. Electric Shock and Arc Flash Hazards

There is a real danger of electric shock to anyone entering any of the electrical cabinets such as combiner boxes, disconnect switches, inverters, or transformers; or otherwise coming in contact with voltages over 50 Volts.[79] Another electrical hazard is an arc flash, which is an explosion of energy that can occur in a short circuit situation. This explosive release of energy causes a flash of heat and a shockwave, both of which can cause serious injury or death. Properly trained and equipped technicians and electricians know how to safely install, test, and repair PV systems, but there is always some risk of

injury when hazardous voltages and/or currents are present. Untrained individuals should not attempt to inspect, test, or repair any aspect of a PV system due to the potential for injury or death due to electric shock and arc flash, The National Electric Code (NEC) requires appropriate levels of warning signs on all electrical components based on the level of danger determined by the voltages and current potentials. The national electric code also requires the site to be secured from unauthorized visitors with either a six-foot chain link fence with three strands of barbed wire or an eight-foot fence, both with adequate hazard warning signs.

4. Fire Safety

The possibility of fires resulting from or intensified by PV systems may trigger concern among the general public as well as among firefighters. However, concern over solar fire hazards should be limited because only a small portion of materials in the panels are flammable, and those components cannot self-support a significant fire. Flammable components of PV panels include the thin layers of polymer encapsulates surrounding the PV cells, polymer backsheets (framed panels only), plastic junction boxes on rear of panel, and insulation on wiring. The rest of the panel is composed of non-flammable components, notably including one or two layers of protective glass that make up over three quarters of the panel's weight.

Heat from a small flame is not adequate to ignite a PV panel, but heat from a more intense fire or energy from an electrical fault can ignite a PV panel.[80] One real-world example of this occurred during July 2015 in an arid area of California. Three acres of grass under a thin film PV facility burned without igniting the panels mounted on fixed-tilt racks just above the grass.[81] While it is possible for electrical faults in PV systems on homes or commercial buildings to start a fire, this is extremely rare.[82] Improving understanding of the PV-specific risks, safer system designs, and updated fire-related codes and standards will continue to reduce the risk of fire caused by PV systems.

PV systems on buildings can affect firefighters in two primary ways, 1) impact their methods of fighting the fire, and 2) pose safety hazard to the firefighters. One of the most important techniques that firefighters use to suppress fire is ventilation of a building's roof. This technique allows superheated toxic gases to quickly exit the building. By doing so, the firefighters gain easier and safer access to the building, Ventilation of the roof also makes the challenge of putting out the fire easier. However, the placement of rooftop PV panels may interfere with ventilating the roof by limiting access to desired venting locations.

New solar-specific building code requirements are working to minimize these concerns. Also, the latest National Electric Code has added requirements that make it easier for first responders to safely and effectively turn off a PV system. Concern for firefighting a building with PV can be reduced with proper fire fighter training, system design, and installation. Numerous organizations have studied fire fighter safety related to PV. Many organizations have published valuable guides and training programs. Some notable examples are listed below.

- The International Association of Fire Fighters (IAFF) and International Renewable Energy Council (IREC) partnered to create an online training course that is far beyond the PowerPoint click-and-view model. The self-paced online course, "Solar PV Safety for Fire Fighters," features rich video content and simulated environments so fire fighters can practice the knowledge they've learned. www.iaff.org/pvsafetytraining
- Photovoltaic Systems and the Fire Code: Office of NC Fire Marshal
- Fire Service Training, Underwriter's Laboratory

- Firefighter Safety and Response for Solar Power Systems, National Fire Protection Research Foundation
- Bridging the Gap: Fire Safety & Green Buildings, National Association of State Fire Marshalls
- Guidelines for Fire Safety Elements of Solar Photovoltaic Systems, Orange County Fire Chiefs Association
- Solar Photovoltaic Installation Guidelines, California Department of Forestry & Fire Protection, Office of the State Fire Marshall
- PV Safety & Firefighting, Matthew Paiss, Homepower Magazine
- PV Safety and Code Development: Matthew Paiss, Cooperative Research Network

Summary

The purpose of this paper is to address and alleviate concerns of public health and safety for utility-scale solar PV projects. Concerns of public health and safety were divided and discussed in the four following sections: (1) Toxicity, (2) Electromagnetic Fields, (3) Electric Shock and Arc Flash, and (4) Fire. In each of these sections, the negative health and safety impacts of utility-scale PV development were shown to be negligible, while the public health and safety benefits of installing these facilities are significant and far outweigh any negative impacts.

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[1] Wiser, Ryan, Trieu Mai, Dev Millstein, Jordan Macknick, Alberta Carpenter, Stuart Cohen, Wesley Cole, Bethany Frew, and Garvin A. Heath. 2016. On the Path to SunShot: The Environmental and Public Health Benefits of Achieving High Penetrations of Solar Energy in the United States. Golden, CO: National Renewable Energy Laboratory. Accessed March 2017, www.nrel.gov/docs/fy16osti/65628.pdf

[2] IRENA and IEA-PVPS (2016), "End-of-Life Management: Solar Photovoltaic Panels," International Renewable Energy Agency and International Energy Agency Photovoltaic Power Systems.

[3] National Renewable Energy Laboratory, *Overview of Field Experience – Degradation Rates & Lifetimes*. September 14, 2015. Solar Power International Conference. Accessed March 2017, www.nrel.gov/docs/fy15osti/65040.pdf

[4] Miesel et al. *SolarCity Photovoltaic Modules with 35 Year Useful Life.* June 2016. Accessed March 2017. http://www.solarcity.com/newsroom/reports/solarcity-photovoltaic-modules-35-year-useful-life

[5] David Unger. *Are Renewables Stormproof? Hurricane Sandy Tests Solar, Wind.* November 2012. Accessed March 2017. http://www.csmonitor.com/Environment/Energy-Voices/2012/1119/Are-renewables-stormproof-Hurricane-Sandy-tests-solar-wind & http://www.csmonitor.com/Environment/Energy-Voices/2012/1119/Are-renewables-stormproof-Hurricane-Sandy-tests-solar-wind

[6] NEXTracker and 365 Pronto, *Tracking Your Solar Investment: Best Practices for Solar Tracker O&M*. Accessed March 2017. www.nextracker.com/content/uploads/2017/03/NEXTracker_OandM-WhitePaper_FINAL_March-2017.pdf

[7] Christiana Honsberg, Stuart Bowden. *Overview of Screen Printed Solar Cells*. Accessed January 2017. www.pveducation.org/pvcdrom/manufacturing/screen-printed

[8] Silicon Valley Toxics Coalition. *2015 Solar Scorecard.* Accessed August 2016. www.solarscorecard.com/2015/2015-SVTC-Solar-Scorecard.pdf

[9] European Commission. *Recast of Reduction of Hazardous Substances (RoHS) Directive*. September 2016. Accessed August 2016. http://ec.europa.eu/environment/waste/rohs_eee/index_en.htm

[10] Official Journal of the European Union, *DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.* June 2011. Accessed May 2017. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32011L0065&from=en

[11] Giancarlo Giacchetta, Mariella Leporini, Barbara Marchetti. *Evaluation of the Environmental Benefits of New High Value Process for the Management of the End of Life of Thin Film Photovoltaic Modules.* July 2013. Accessed August 2016. www.researchgate.net/publication/257408804_Evaluation_of_the_environmental_benefits_of_new_high_value_process_for_the_management_of_the_end_of_life_of_thin_film_photovoltaic_modules

[12] European Commission. *Study on Photovoltaic Panels Supplementing The Impact Assessment for a Recast of the Weee Directive.* April 2011. Accessed August 2016. http://ec.europa.eu/environment/waste/weee/pdf/Study%20on%20PVs%20Bio%20final.pdf

[14] The amount of lead in a typical car battery is 21.4 pounds. Waste 360. Chaz Miller. *Lead Acid Batteries.* March 2006. Accessed August 2016. http://waste360.com/mag/waste_leadacid_batteries_3

[15] Okkenhaug G. *Leaching from CdTe PV module material results from batch, column and availability tests.* Norwegian Geotechnical Institute, NGI report No. 20092155-00-6-R; 2010

[16] International Journal of Advanced Applied Physics Research. Renate Zapf-Gottwick1, et al. *Leaching Hazardous Substances out of Photovoltaic Modules*. January 2015. Accessed January 2016. www.cosmosscholars.com/phms/index.php/ijaapr/article/download/485/298

[17] ibid

[18] Parikhit Sinha, et al. Evaluation of Potential Health and Environmental Impacts from End-Of-Life Disposal of Photovoltaics, Photovoltaics, 2014. Accessed May 2016

[19] Bonnet, D. and P. Meyers. 1998. *Cadmium-telluride—Material for thin film solar cells.* J. Mater. Res., Vol. 13, No. 10, pp. 2740-2753

[20] V. Fthenakis, K. Zweibel. *CdTe PV: Real and Perceived EHS Risks*. National Center ofr Photovoltaics and Solar Program Review Meeting, March 24-26, 2003. www.nrel.gov/docs/fy03osti/33561.pdf. Accessed May 2017

[21] International Energy Agency Photovoltaic Power Systems Programme. *Life Cycle Inventories and Life Cycle Assessments of Photovoltaic Systems*. March 2015. Accessed August 2016. http://iea-pvps.org/index.php?id=315

[22] Data not available on fraction of various generation sources offset by solar generation in NC, but this is believed to be a reasonable rough estimate. The SunShot report entitled The Environmental and Public Health Benefits of Achieving High Penetrations of Solar Energy in the United States analysis contributes significant (% not provided) offsetting of coal-fired generation by solar PV energy in the southeast.

[23] 7 MW_{DC} * 1.5 GWh/MW_{DC} * 25 years * 0.93 degradation factor * (0.1 *4.65 grams/GWh + 0.9*0.2 grams/GWh)

[24] Vasilis Fthenakis. *CdTe PV: Facts and Handy Comparisons.* January 2003. Accessed March 2017. https://www.bnl.gov/pv/files/pdf/art_165.pdf

[25] Kaczmar, S., *Evaluating the Read-Across Approach on CdTe Toxicity for CdTe Photovoltaics*, SETAC North America 32nd Annual Meeting, Boston, MA, November 2011. Available at: ftp://ftp.co.imperial.ca.us/icpds/eir/campo-verde-solar/final/evaluating-toxicity.pdf, Accessed May 2017

[27] V. M. Fthenakis et al, *Emissions and Encapsulation of Cadmium in CdTe PV Modules During Fires* Renewable Progress in Photovoltaics: Research and Application: Res. Appl. 2005; 13:1–11, Accessed March 2017, www.bnl.gov/pv/files/pdf/abs_179.pdf

[28] Fthenakis *V.M., Life Cycle Impact Analysis of Cadmium in CdTe Photovoltaic Production*, Renewable and Sustainable Energy Reviews, 8, 303-334, 2004. www.clca.columbia.edu/papers/Life_Cycle_Impact_Analysis_Cadmium_CdTe_Photovoltaic_production.pdf, Accessed May 2017

[29] International Renewable Energy Agency. Stephanie Weckend, Andreas Wade, Garvin Heath. *End of Life Management: Solar Photovoltaic Panels*. June 2016. Accessed November 2016.

[30] International Journal of Advanced Applied Physics Research. Renate Zapf-Gottwick1, et al. *Leaching Hazardous Substances out of Photovoltaic Modules*. January 2015. Accessed January 2016. www.cosmosscholars.com/phms/index.php/ijaapr/article/download/485/298

[31] Cunningham D., Discussion about TCLP protocols, Photovoltaics and the Environment Workshop, July 23-24, 1998, Brookhaven National Laboratory, BNL-52557

[32] Parikhit Sinha, et al. Evaluation of Potential Health and Environmental Impacts from End-Of-Life Disposal of Photovoltaics, Photovoltaics, 2014. Accessed May 2016

[33] Practical Handbook of Photovoltaics: Fundamentals and Applications. T. Markvart and L. Castaner. *Chapter VII-2: Overview of Potential Hazards*. December 2003. Accessed August 2016. https://www.bnl.gov/pv/files/pdf/art_170.pdf

[34] Norwegian Geotechnical Institute. *Environmental Risks Regarding the Use and End-of-Life Disposal of CdTe PV Modules*. April 2010. Accessed August 2016. https://www.dtsc.ca.gov/LawsRegsPolicies/upload/Norwegian-Geotechnical-Institute-Study.pdf

[35] First Solar. Dr. Yasunari Matsuno. December 2013. August 2016. *Environmental Risk Assessment of CdTe PV Systems to be considered under Catastrophic Events in Japan*. http://www.firstsolar.com/-/media/Documents/Sustainability/Peer-Reviews/Japan_Peer-Review_Matsuno_CdTe-PV-Tsunami.ashx

[36] First Solar. Parikhit Sinha, Andreas Wade. *Assessment of Leaching Tests for Evaluating Potential Environmental Impacts of PV Module Field Breakage*. 2015 IEEE

[37] See p. 22 of First Solar, Sustainability Report. Available at: www.firstsolar.com/-/media/First-Solar/Sustainability-Documents/03801_FirstSolar_SustainabilityReport_08MAR16_Web.ashx, Accessed May 2017

[38] 40 CFR §261.24. *Toxicity Characteristic*. May 2017. Accessed May 2017. https://www.ecfr.gov/cgi-bin/text-idx?node=se40.26.261_124&rgn=div8
[39] Office of Energy Efficiency & Renewable Energy. *Copper Indium Gallium Diselenide.* Accessed March 2017. https://www.energy.gov/eere/sunshot/copper-indium-gallium-diselenide
[40] Mathias Maehlum. *Best Thin Film Solar Panels – Amorphous, Cadmium Telluride or CIGS?* April 2015. Accessed March 2017. http://energyinformative.org/best-thin-film-solar-panels-amorphous-cadmium-telluride-cigs/
[41] RoHS tested certificate for Solar Frontier PV modules. TUVRheinland, signed 11.11.2013
[42] International Renewable Energy Agency. Stephanie Weckend, Andreas Wade, Garvin Heath. *End of Life Management: Solar Photovoltaic Panels*. June 2016. Accessed November 2016. http://www.irena.org/DocumentDownloads/Publications/IRENA_IEAPVPS_End-of-Life_Solar_PV_Panels_2016.pdf
[43] 40 C.F.R. §261.10. *Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste*. November 2016. Accessed November 2016 http://www.ecfr.gov/cgi-bin/text-idx?SID=ce0006d66da40146b490084ca2816143&mc=true&node=pt40.26.261&rgn=div5#sp40.28.261.b
[44] 40 C.F.R. §261.24 *Toxicity Characteristic.* November 2016. Accessed November 2016. http://www.ecfr.gov/cgi-bin/text-idx?SID=ce0006d66da40146b490084ca2816143&mc=true&node=pt40.26.261&rgn=div5#se40.28.261_124
[45] International Renewable Energy Agency. Stephanie Weckend, Andreas Wade, Garvin Heath. *End of Life Management: Solar Photovoltaic Panels*. June 2016. Accessed November 2016. http://www.irena.org/DocumentDownloads/Publications/IRENA_IEAPVPS_End-of-Life_Solar_PV_Panels_2016.pdf
[46] TLCP test results from third-party laboratories for REC, Jinko, and Canadian Solar silicon-based panels. Provided by PV panel manufacturers directly or indirectly to authors
[47] Sinovoltaics, *Introduction to Solar Panel Recycling*, March 2014. Accessed October 2016. http://sinovoltaics.com/solar-basics/introduction-to-solar-panel-recycling/
[48] Brookhaven National Laboratory. Vasilis Fthenakis, *Regulations on Photovoltaic Module Disposal and Recycling.* January 29, 2001.
[49] Parikhit Sinha, et al. Evaluation of Potential Health and Environmental Impacts from End-Of-Life Disposal of Photovoltaics, Photovoltaics, 2014.
[50] First Solar. Parikhit Sinha, Andreas Wade. *Assessment of Leaching Tests for Evaluating Potential Environmental Impacts of PV Module Field Breakage.* October 2015. Accessed August 2016. http://www.firstsolar.com/-/media/Documents/Sustainability/PVSC42-Manuscript-20150912--Assessment-of-Leaching-Tests-for-Evaluating-Potential-Environmental-Impa.ashx
[51] First Solar. Dr. Yasunari Matsuno. December 2013. *Environmental Risk Assessment of CdTe PV Systems to be considered under Catastrophic Events in Japan*. http://www.firstsolar.com/-/media/Documents/Sustainability/Peer-Reviews/Japan_Peer-Review_Matsuno_CdTe-PV-Tsunami.ashx
[52] Phone interview, February 3, 2016, TT&E Iron & Metal, Garner, NC www.ncscrapmetal.com/
[53] Wen-His Huang, et al. *Strategy and Technology To Recycle Water-silicon Solar Modules*. Solar Energy, Volume 144, March 2017, Pages 22-31
[54] International Renewable Energy Agency. Stephanie Weckend, Andreas Wade, Garvin Heath. *End of Life Management: Solar Photovoltaic Panels*. June 2016. Accessed November 2016. http://www.irena.org/DocumentDownloads/Publications/IRENA_IEAPVPS_End-of-Life_Solar_PV_Panels_2016.pdf
[55] Official Journal of the European Union. *Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on Waste Electrical and Electronic Equipment*. July 2012. Accessed November 2016. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0019
[56] PV CYCLE. *Annual Report 2015.* Accessed November 2016. https://pvcyclepublications.cld.bz/Annual-Report-PV-CYCLE-2015/6-7
[57] Official Journal of the European Union. *Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on Waste Electrical and Electronic Equipment*. July 2012. Accessed November 2016. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012L0019
[58] SEIA National PV Recycling Program: www.seia.org/seia-national-pv-recycling-program
[59] RBI Solar, Decommissioning Plan submitted to Catawba County associated with permitting of a 5MW solar project in June 2016. Accessed April 2017. www.catawbacountync.gov/Planning/Projects/Rezonings/RZ2015-05_DecommissioningPlan.pdf
[60] Birdseye Renewables, Decommissioning Plan submitted to Catawba County associated with permitting of a 5MW solar project in May 2015. Accessed April 2017. www.catawbacountync.gov/Planning/Projects/Rezonings/RZ2015-04_DecommissioningPlan.pdf
[61] Cypress Creek Renewables, Decommissioning Plan submitted to Catawba County associated with permitting of a 5MW solar project in September 2016. Accessed April 2017. www.catawbacountync.gov/Planning/Projects/Rezonings/RZ2016-06decommission.pdf
[62] Sun Raised Farms: http://sunraisedfarms.com/index.html
[63] National Institute of Environmental Health Sciences and National Institutes of Health, EMF: Electric and Magnetic Fields Associated with Electric Power: Questions and Answers, June 2002

[64] World Health Organization. *Electromagnetic Fields and Public Health: Exposure to Extremely Low Frequency Fields*. June 2007. Accessed August 2016. http://www.who.int/peh-emf/publications/facts/fs322/en/
[65] Committee on the Possible Effects of Electromagnetic Fields on Biologic Systems, National Research Council, Possible Health Effects of Exposure to Residential Electric and Magnetic Fields, ISBN: 0-309-55671-6, 384 pages, 6 x 9, (1997) This PDF is available from the National Academies Press at: http://www.nap.edu/catalog/5155.html
[66] World Health Organization. *Electromagnetic Fields and Public Health: Exposure to Extremely Low Frequency Fields*. June 2007. Accessed August 2016. http://www.who.int/peh-emf/publications/facts/fs322/en/
[67] World Health Organization. *Electromagnetic Fields and Public Health: Static Electric and Magnetic Fields*. March 2006. Accessed August 2016. http://www.who.int/peh-emf/publications/facts/fs299/en/
[68] Asher Sheppard, Health Issues Related to the Static and Power-Frequency Electric and Magnetic Fields (EMFs) of the Soitec Solar Energy Farms, April 30, 2014. Accessed March 2017: www.sandiegocounty.gov/content/dam/sdc/pds/ceqa/Soitec-Documents/Final-EIR-Files/Appendix_9.0-1_EMF.pdf
[69] Massachusetts Clean Energy Center. *Study of Acoustic and EMF Levels from Solar Photovoltaic Projects*. December 2012. Accessed August 2016.
[70] Duke Energy Corporation. *Frequently Asked Questions: Electric and Magnetic Fields*. Accessed August 2016. https://www.duke-energy.com/about-energy/frequently_asked_questions.asp
[71] National Institute of Environmental Health Sciences, *Electric and Magnetic Fields Associate with the use of Electric Power: Questions and Answers*, 2002. Accessed November 2016 www.niehs.nih.gov/health/materials/electric_and_magnetic_fields
[72] Duke Energy Corporation. *Frequently Asked Questions: Electric and Magnetic Fields*. Accessed August 2016. https://www.duke-energy.com/about-energy/frequently_asked_questions.asp
[73] R.A. Tell et al, *Electromagnetic Fields Associated with Commercial Solar Photovoltaic Electric Power Generating Facilities*, Journal of Occupational and Environmental Hygiene, Volume 12, 2015,- Issue 11. Abstract Accessed March 2016: http://www.tandfonline.com/doi/full/10.1080/15459624.2015.1047021
[74] Massachusetts Department of Energy Resources, Massachusetts Department of Environmental Protection, and Massachusetts Clean Energy Center. *Questions & Answers: Ground-Mounted Solar Photovoltaic Systems*. June 2015. Accessed August 2016. http://www.mass.gov/eea/docs/doer/renewables/solar/solar-pv-guide.pdf
[75] Ibid.
[76] Ibid.
[77] *EMFs and medical devices*, Accessed March 2017. www.emfs.info/effects/medical-devices/
[78] ibid.
[79] Damon McCluer. *Electrical Construction & Maintenance: NFPA 70E's Approach to Considering DC Hazards*. September 2013. Accessed October 2016. http://ecmweb.com/safety/nfpa-70e-s-approach-considering-dc-hazards,
[80] Hong-Yun Yang, et. al. *Experimental Studies on the Flammability and Fire Hazards of Photovoltaic Modules, Materials.* July 2015. Accessed August 2016. http://www.mdpi.com/1996-1944/8/7/4210/pdf
[81] Matt Fountain. The Tribune. *Fire breaks out at Topaz Solar Farm*. July 2015. Accessed August 2016. www.sanluisobispo.com/news/local/article39055539.html
[82] Cooperative Research Network. Matthew Paiss. *Tech Surveillance: PV Safety & Code Developments*. October 2014. Accessed August 2016. http://www.nreca.coop/wp-content/uploads/2013/06/ts_pv_fire_safety_oct_2014.pdf

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APPENDIX G: FAA GLARE ANALYSIS AND GLINT/GLARE STUDY

Enclosed.

FORGESOLAR GLARE ANALYSIS

Project: **Hedera Solar**
Site configuration: **Hedera**

Created 12 Jun, 2024
Updated 12 Jun, 2024
Time-step 1 minute
Timezone offset UTC-8
Minimum sun altitude 0.0 deg
DNI peaks at 1,000.0 W/m^2
Category 500 kW to 1 MW
Site ID 121566.20891

Ocular transmission coefficient 0.5
Pupil diameter 0.002 m
Eye focal length 0.017 m
Sun subtended angle 9.3 mrad
PV analysis methodology V2



Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Array	SA tracking	SA tracking	0	0.0	0	0.0	8,307,000.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Hill Ln	0	0.0	0	0.0
Ivy Hill Rd	0	0.0	0	0.0
Richmond Rd	0	0.0	0	0.0

Component Data

PV Arrays

Name: Array
Axis tracking: Single-axis rotation
Backtracking: Shade-slope
Tracking axis orientation: 180.0°
Max tracking angle: 52.0°
Resting angle: 5.0°
Ground Coverage Ratio: 0.33
Rated power: 3000.0 kW
Panel material: Light textured glass without AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	37.404107	-76.845846	47.55	10.00	57.55
2	37.403644	-76.839115	98.50	10.00	108.50
3	37.402118	-76.839074	94.04	10.00	104.04
4	37.401513	-76.839350	93.18	10.00	103.18
5	37.401222	-76.842797	90.67	10.00	100.67
6	37.401290	-76.844238	60.18	10.00	70.18
7	37.401619	-76.844917	58.70	10.00	68.70

Route Receptors

Name: Hill Ln
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	37.401179	-76.839007	85.59	0.00	85.59
2	37.401260	-76.840885	86.33	0.00	86.33
3	37.400966	-76.842918	85.79	0.00	85.79
4	37.400983	-76.843465	83.70	0.00	83.70
5	37.400736	-76.843851	84.43	0.00	84.43
6	37.400629	-76.844398	83.37	0.00	83.37
7	37.400152	-76.844860	81.11	0.00	81.11
8	37.399347	-76.846179	95.58	0.00	95.58

Name: Ivy Hill Rd
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	37.404001	-76.838543	98.79	0.00	98.79
2	37.402084	-76.838693	90.27	0.00	90.27
3	37.400430	-76.839273	79.34	0.00	79.34
4	37.399433	-76.839509	44.85	0.00	44.85

Name: Richmond Rd
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	37.405186	-76.848843	48.61	0.00	48.61
2	37.404606	-76.846171	40.05	0.00	40.05
3	37.403882	-76.836988	101.63	0.00	101.63

Glare Analysis Results

Summary of Results No glare predicted

PV Array	Tilt	Orient	Annual Green Glare		Annual Yellow Glare		Energy
	°	°	min	hr	min	hr	kWh
Array	SA tracking	SA tracking	0	0.0	0	0.0	8,307,000.0

Total glare received by each receptor; may include duplicate times of glare from multiple reflective surfaces.

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Hill Ln	0	0.0	0	0.0
Ivy Hill Rd	0	0.0	0	0.0
Richmond Rd	0	0.0	0	0.0

PV: Array no glare found

Receptor results ordered by category of glare

Receptor	Annual Green Glare		Annual Yellow Glare	
	min	hr	min	hr
Hill Ln	0	0.0	0	0.0
Ivy Hill Rd	0	0.0	0	0.0
Richmond Rd	0	0.0	0	0.0

Array and Route: Hill Ln

No glare found

Array and Route: Ivy Hill Rd

No glare found

Array and Route: Richmond Rd

No glare found

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects V1 analyses of path receptors.
Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
The analysis does not automatically consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Refer to the Help page at **www.forgesolar.com/help/** for assumptions and limitations not listed here.

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

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Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

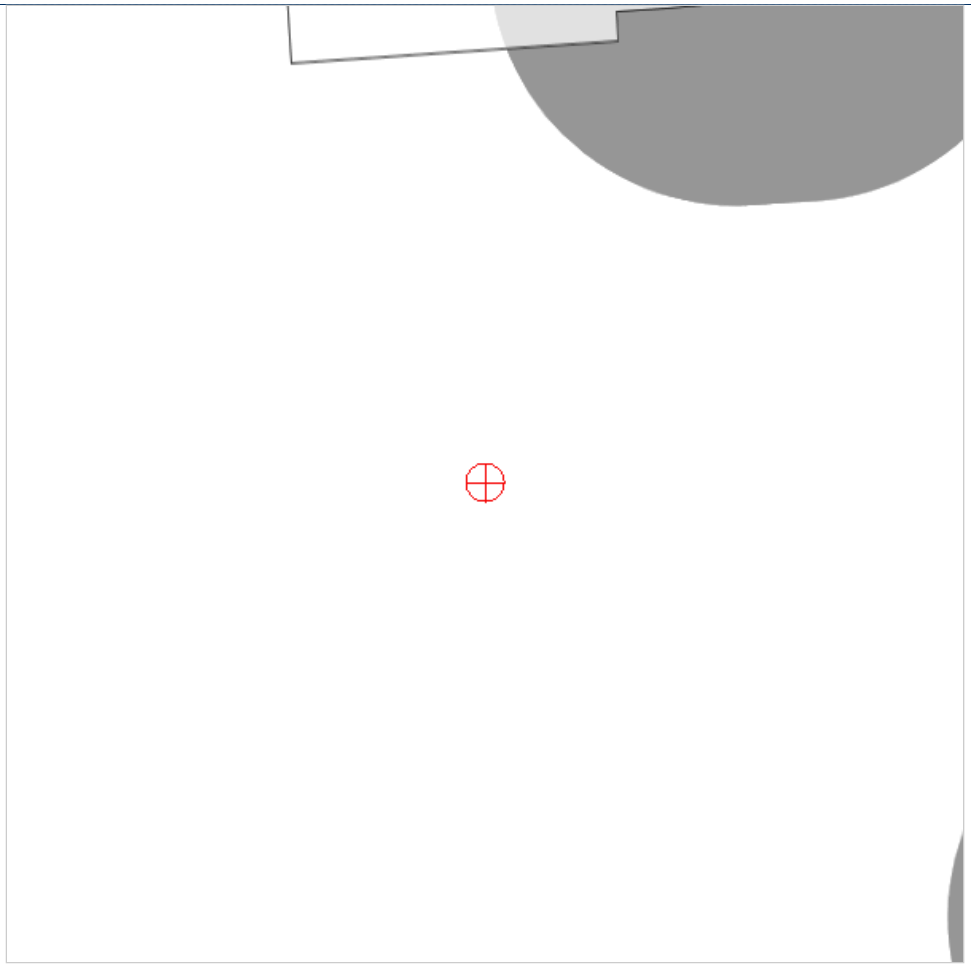
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	POWER_LINE | Utility Pole Please select structure type and complete location point information.
Latitude:	37 Deg 24 M 14.64 S N
Longitude:	76 Deg 50 M 29.60 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	70 (nearest foot)
Structure Height :	50 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.



Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

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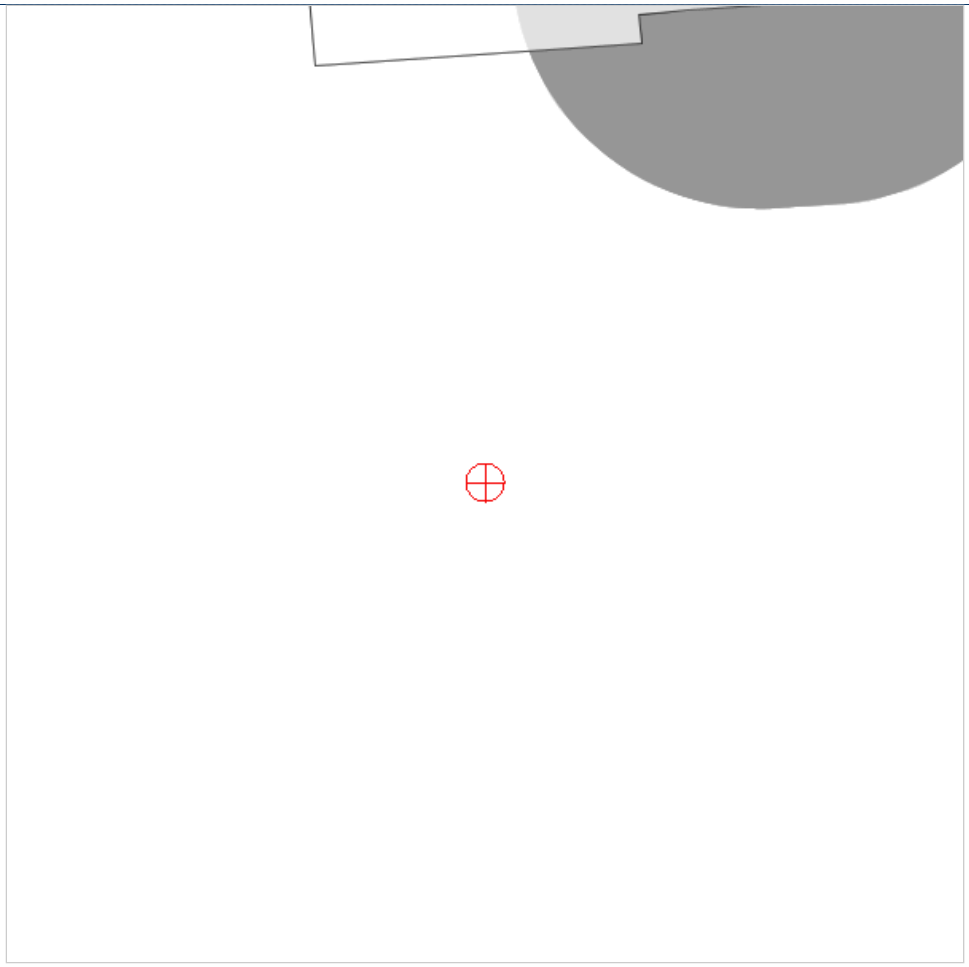
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 24 M 17.08 S N
Longitude:	76 Deg 50 M 52.41 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	27 (nearest foot)
Structure Height :	10 (nearest foot)
Is structure on airport:	(•) No ( ) Yes

Results

You do not exceed Notice Criteria.



Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

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- filing has been requested by the FAA

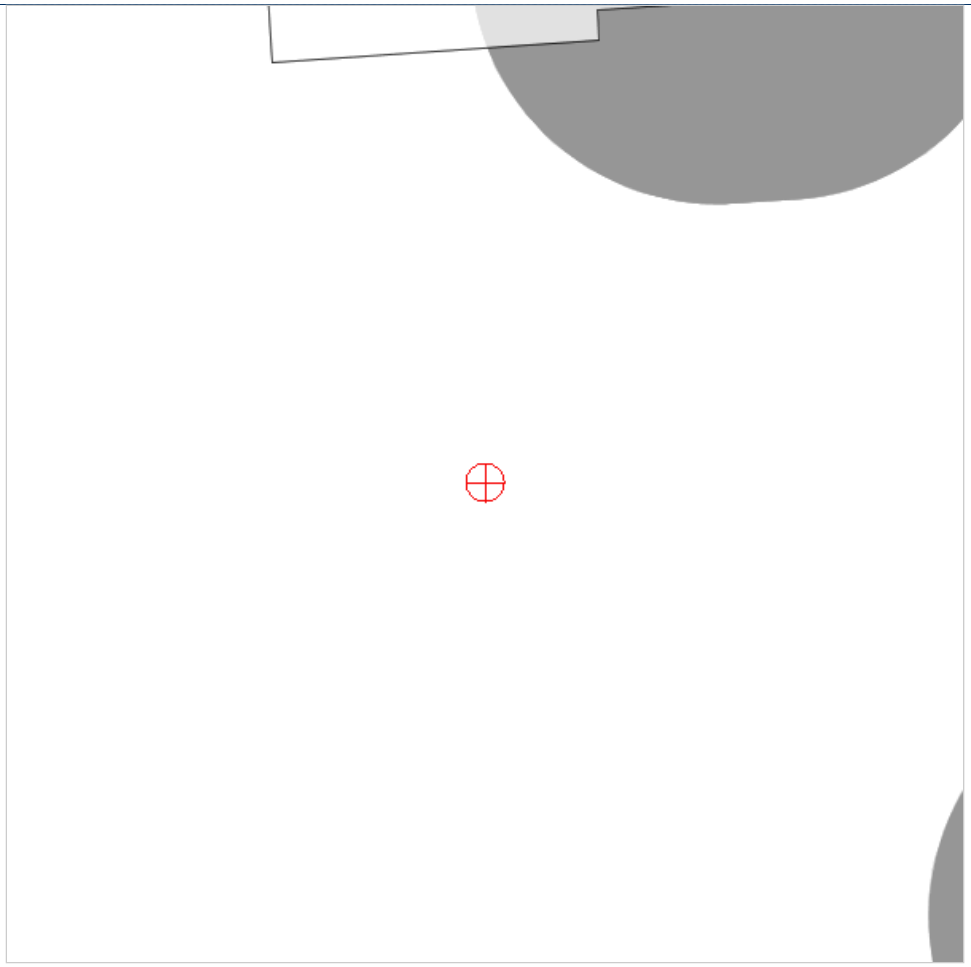
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 24 M 13.48 S N
Longitude:	76 Deg 50 M 10.20 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	103 (nearest foot)
Structure Height :	10 (nearest foot)
Is structure on airport:	(●) No ( ) Yes

Results

You do not exceed Notice Criteria.



Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

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- filing has been requested by the FAA

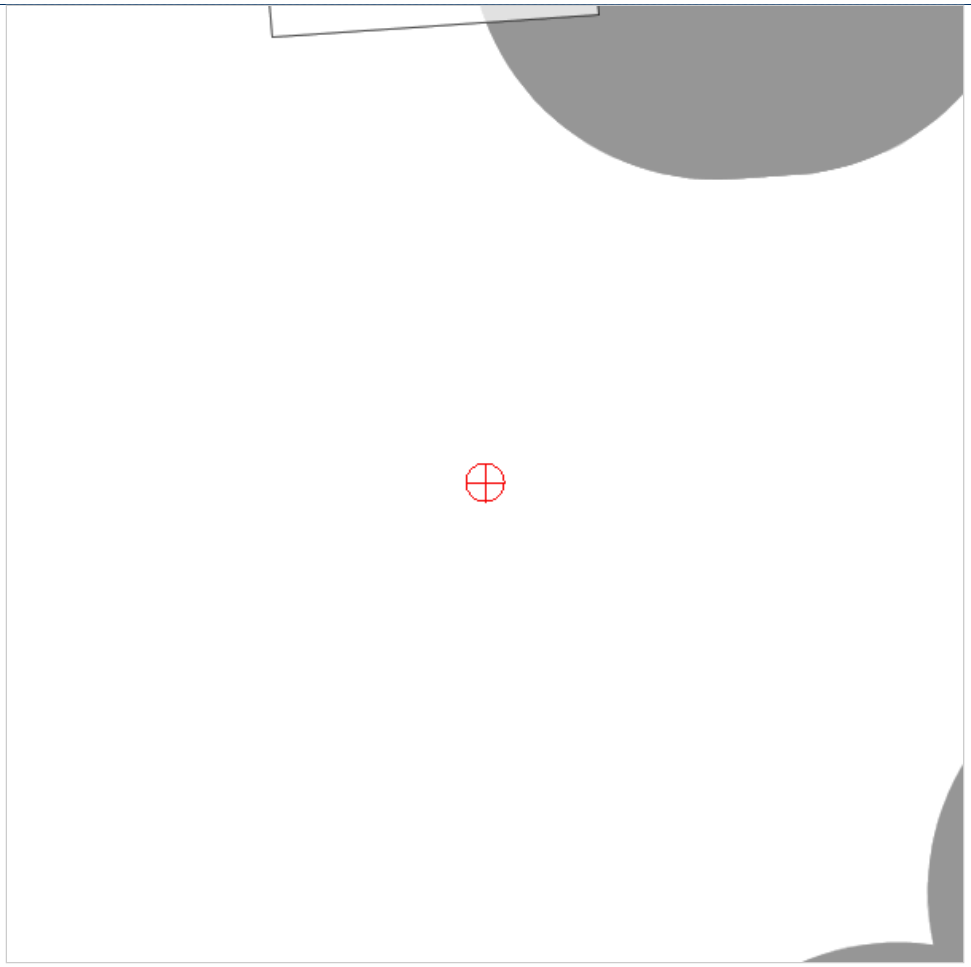
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 23 M 53.83 S N
Longitude:	76 Deg 50 M 9.344 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	76 (nearest foot)
Structure Height :	10 (nearest foot)
Is structure on airport:	(•) No ( ) Yes

Results

You do not exceed Notice Criteria.



Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

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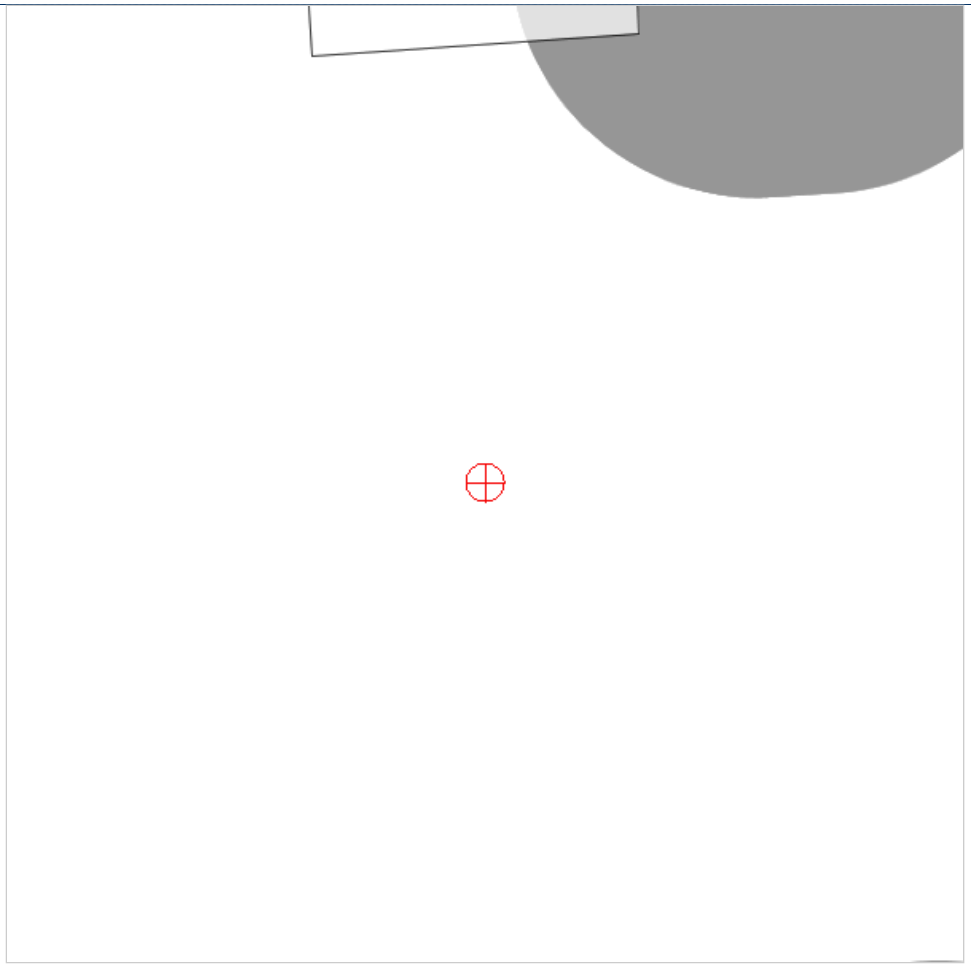
If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

* **Structure Type:**	SOLAR | Solar Panel Please select structure type and complete location point information.
Latitude:	37 Deg 24 M 8.355 S N
Longitude:	76 Deg 50 M 50.48 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	21 (nearest foot)
Structure Height :	10 (nearest foot)
Is structure on airport:	(•) No ( ) Yes

Results

You do not exceed Notice Criteria.



APPENDIX H: TRAFFIC IMPACT REPORT AND ENTRANCE EXHIBIT

Enclosed.

Kimley»Horn

MEMORANDUM

To:	Ester Rekhelman – Hexagon Development, LLC
From:	Nicholas Robertson, P.E., PMP – Kimley-Horn
Date:	October 10, 2024
Subject:	Hedera Solar – Traffic Memorandum

1 INTRODUCTION

1.1 Project Background

As requested by Hexagon Development, LLC., Kimley-Horn and Associates, Inc. (Kimley-Horn) has prepared a traffic memorandum to support the future, proposed Solar Photovoltaic (PV) Generation Facility located on the Hedera Solar Site in James City County, Virginia. The project site is located on State Route 60 (Richmond Road) at the intersection with State Route 657 (Ivy Hill Road).

This memorandum is based on publicly available data from VDOT and from information provided by Hexagon Development, LLC.

The purpose of this memorandum is to address potential concerns related to traffic generated by the construction of the proposed project. The memorandum includes analysis of the following:

- Review of existing transportation facilities (i.e., roadways) providing access and/or adjacent to the proposed solar site
- Compiling available traffic data for the roadways
- Discussing trip generation and traffic impacts for the proposed site during construction operations

2 EXISTING CONDITIONS

2.1 ADJACENT ROADWAYS

The following provides a brief description of existing roadway characteristics for each facility:

2.1.1 State Route 657 (Ivy Hill Road)

State Route 657 is a two-lane, local roadway that runs in an approximate north/south direction within the study area. It primarily serves residential and agricultural land uses. The 2022 VDOT AADT and Vehicle Classification Estimates data indicate that State Route 657 (Ivy Hill Road) carries approximately 250 vpd. There is no posted speed limit for State Route 657 so the statutory speed limit of 55 MPH and 45 MPH for trucks applies.

2.1.2 U.S. Route 60 (Richmond Road)

U.S. Route 60 is a four-lane, divided minor arterial that runs in an approximate east/west direction within the study area. The 2022 VDOT AADT and Vehicle Classification Estimates data indicate that U.S. Route 60 carries approximately 6,800 vpd, including less than 3% heavy vehicles along the section of the roadway between the New Kent County Line and State Route 30 North of Toano. This stretch of U.S. Route 60 has a posted speed limit of 55 MPH.

2.1.3 State Route 155 (N Courthouse Road)

State Route 155 is a two-lane, undivided minor arterial that runs in an approximate north/south direction within the study area. The 2022 VDOT AADT and Vehicle Classification Estimates data indicate that State Route 155 carries approximately 3,700 vpd, including less than 8% heavy vehicles along the section of roadway between I-64 and U.S. Route 60. This stretch of State Route 155 has a posted speed limit of 45 MPH when exiting I-64 and then it increases to 55 MPH once you are past the Kentland Trail intersection. The speed limit drops back down to 45 MPH at the intersection with Marsh Road. There are overhead lines that cross this roadway.

2.2 STUDY MAJOR INTERSECTIONS

The route to the site for construction and operations/maintenance is proposed to travel from Interstate 64 via State Route 155, with traffic turning left at U.S. Route 60. From U.S. Route 60, traffic will turn right on State Route 657. Access to the proposed development site will utilize a proposed access road located off State Route 657 approximately 0.1 miles south of the intersection with U.S. Route 60.

2.2.1 State Route 155 at Kentland Trail

The unsignalized intersection of State Route 155 and Kentland Trail is a roundabout. The intersection appears to have sufficient sight distance. A search of the previous five years of VDOT crash data for this intersection show that the intersection was converted to a roundabout sometime between 2021 and 2022. Since its conversion there have been five angle collisions with property damage only. This intersection appears to be able to safely support the Hedera Solar development traffic which is shown below in Section 3.

2.2.2 State Route 155 at U.S. Route 60

The signalized intersection of State Route 155 and U.S. Route 60 appears to have sufficient sight distance. Construction vehicles would be turning left at this intersection utilizing the left turn lane. There are overhead lines crossing State Route 155 and U.S. Route 60 at this intersection. A search of the previous five years of VDOT crash data for this approach at the intersection showed an angle collision in 2022 and 2024 with property damage only and in 2022 with a visible injury. This intersection appears to be able to safely support the Hedera Solar development traffic which is shown below in Section 3.

2.2.3 U.S. Route 60 at Waterside Drive

The unsignalized intersection of U.S. Route 60 and Waterside Drive appears to have sufficient sight distance. A search of the previous five years of VDOT crash data for this intersection showed no collisions. This intersection appears to be able to safely support the Hedera Solar development traffic which is shown below in Section 3.

2.2.4 Site Driveway

The site will be accessed via a proposed entrance on U.S. Route 60 approximately 100 feet east of the intersection with State Route 657. There appears to be sufficient sight distance at this intersection. It is recommended that “Trucks Entering Highway” (VDOT Work Area Protection Manual W11-V4) warning signs be used in advance of the driveway on U.S. Route 60 during the construction period of the proposed site.

3 SITE-GENERATED TRAFFIC

General construction traffic will consist of the following:

- Component deliveries (i.e., solar panels, earthwork equipment, construction waste removal, modules, etc.) via single-unit and/or low-boy trucks
- Passenger vehicles carrying personnel, tools, and minor equipment to and around the proposed development site

Construction is anticipated to last approximately three to four months with the intensity of trucks and employees accessing the site varying over the course of construction. The first and final months of construction are anticipated to average less than one truck per day. The peak construction period is expected to occur during the one-to-two-month period in the middle of construction. During the first half of the peak construction period, the site is estimated to experience one truck per day (i.e., weekdays Monday – Friday) delivering materials. Deliveries are anticipated to be staggered to meet construction needs and will attempt to occur during the non-peak travel periods.

In addition, the construction site is expected to have an estimated 20 employees during the peak period of construction. It’s expected that some employees will carpool to the site; an average vehicle occupancy of 1.5 was assumed. As a result, 14 passenger vehicle trips will access the site per day during the peak period of construction. All construction staging, parking, and assembly areas are anticipated to be within the project boundaries.

Following the construction of the site, maintenance of the site will occur on a monthly, quarterly, and annual basis for different circumstances. Panel washings and general maintenance are anticipated to occur a few times a year. This will require the presence of approximately 2 workers at the site occasionally throughout the year. During the growing season, it is anticipated that a maximum of one vehicle per week will access the site for lawn maintenance. Therefore, operation and maintenance of the site is not expected to generate significant traffic volumes or volumes to the level expected during the construction phase of the project.

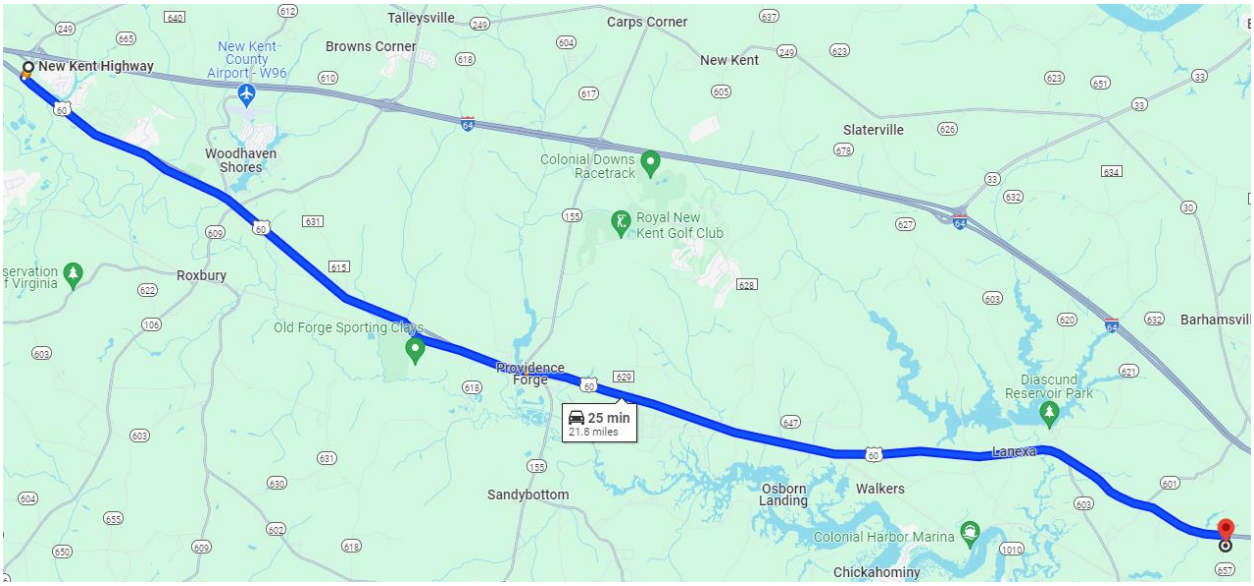
All the site generated trucks and the majority of the employee traffic are expected to travel to/from the site entrance on via the route described in Section 2.2. The study area roadways have adequate capacity to support the increase in trips during the site construction and ongoing maintenance.

4 CONCLUSIONS AND RECOMMENDATIONS

Based on the proposed site access driveway location and anticipated traffic operations associated with the proposed Hedera Solar development, we offer the following conclusions and recommendations:

- A Construction Traffic and Access Management Plan should be developed in advance of the construction phase of the project to establish safe and feasible routing, signage, and other measures to address the findings in this memorandum. This process should include conversations with the County to minimize impacts to school traffic and provide opportunities for input and coordination with local emergency services. Preparation of the plan shall include consideration of the following: (i) prescribing truck routes to/from the project site, (ii) details of traffic safety signage plan, (iii) limiting impacts to residents and community events, and (iv) Emergency services access to the site.
    - It is recommended that a full geometry analysis be performed of all roadways and intersections to ensure they can accommodate all necessary construction traffic. This should include turning radius analysis.
- A Transportation Management Plan (TMP), as required by VDOT IIM-LD-241.7, should be developed to identify work zone impacts in an effort to promote work zone mobility in a manner that is safe for both motorists and construction personnel.
- The State Route 155 and Kentland Trail intersection appears to be able to safely support the Hedera Solar development traffic.
- The State Route 155 and U.S. Route 60 intersection appears to be able to safely support the Hedera Solar development traffic.
- Site traffic will access the site via the proposed driveway located along U.S. Route 60.
    - It is recommended that the construction entrance driveway be constructed wide enough to accommodate WB-67 trucks accessing the site.
    - Warning signs are recommended along U.S. Route 60 in advance of the proposed driveway to advise drivers (i.e., to advise drivers approaching the intersection from both directions) of potential turning vehicles during construction of the site.
- Analysis is recommended along the proposed route to ensure the overhead lines are not in conflict with any necessary construction traffic.
- An alternative route to the site taking the New Kent Highway Exit off of I-64 is shown below.
- Up to 20 employees are anticipated during the peak period of construction. Approximately 1 truck per day is also anticipated to deliver materials to the site during the peak period of construction. The study area roadways have adequate capacity to support this increase in traffic volume during the construction of this site.
- If all construction staging, parking, and assembly areas cannot be accommodated within the project boundaries, coordination should take place during the permitting phase with the County to make alternative arrangements that will limit impacts to the surrounding community.
- Prior to beginning construction, it is suggested to coordinate with VDOT to perform a field assessment to document existing conditions of the construction route roadways and intersections. In addition, it is important to coordinate closely with VDOT and the County throughout the construction phase to mitigate potential impacts to traffic operations on the local streets and/or to travel through the area by residents.

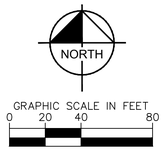
- VDOT will require a surety bond to be posted to protect the integrity of the roadway pavement and the developer will be responsible for ongoing maintenance during construction as well as repairs post construction.



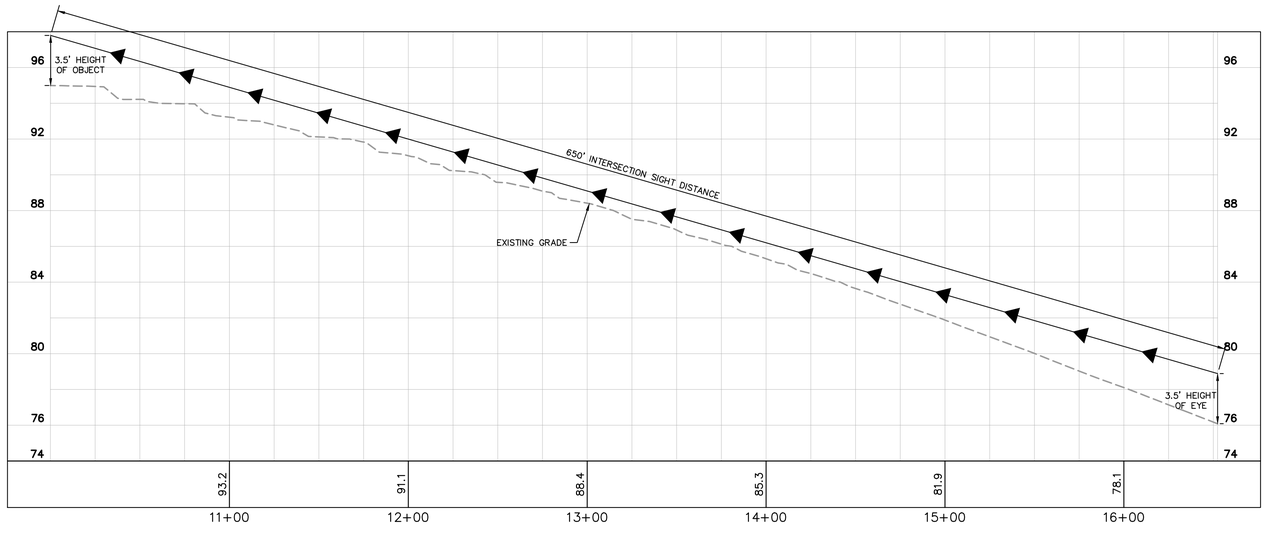


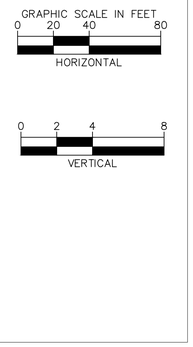
ENTRANCE AND SIGHT DISTANCE NOTES

1. THE PROPOSED SITE IS A UTILITY INFRASTRUCTURE PROJECT WITH LESS THAN 10 TRIPS PER DAY. THEREFORE, THE PERMANENT ENTRANCES ARE CONSIDERED PRIVATE AND WILL CONFORM TO VDOT STD. PE-1 WITH MODIFIED DIMENSIONS.
2. TO ENSURE AND DOCUMENT THE FUNCTIONALITY OF THE PERMANENT AND TEMPORARY ENTRANCES DURING THE CONSTRUCTION STAGES OF THE PROJECT, WARNING SIGNS AND SIGHT DISTANCE LINES ARE SHOWN HERE IN ACCORDANCE WITH VIRGINIA WORK AREA PROTECTION MANUAL GUIDANCE PER TTC 63.2 AND THE VDOT ROAD DESIGN MANUAL - APPENDIX F. WHILE NO LOGGING OPERATIONS ARE PROPOSED, TTC 63.2 PROVIDES PARAMETERS TO ENSURE THE ADEQUACY OF ENTRANCES USED FOR SHORT-TERM CONSTRUCTION. THESE MEASURES ARE PROPOSED ONLY FOR THE DURATION OF CONSTRUCTION.
3. ALL WARNING SIGNS AND OTHER TEMPORARY MEASURES ARE TO BE REMOVED ONCE CONSTRUCTION IS COMPLETE.
4. LIMBS AND SHRUBS ON THE PROPERTY AND WITHIN THE RIGHT-OF-WAY ARE TO BE TRIMMED AS NEEDED TO ENSURE ADEQUATE SIGHT DISTANCE.
5. PERMITTEE WILL BE RESPONSIBLE FOR ENSURING THAT ALL ENTRANCE DRAINAGE DOES NOT FLOW ONTO THE EXISTING ROAD
6. PERMITTEE WILL BE RESPONSIBLE FOR REMOVING AND CLEANING ANY MUD TRACKED FORM THE PROJECT SITE ON THE THE EXISTING ROADWAY.
7. EXISTING PAVEMENT TO BE PROTECTED. USE OF RUBBER TIRED EQUIPMENT IS SUGGESTED
8. TOPOGRAPHIC INFORMATION BASED ON PUBLIC LIDAR DATA.



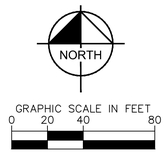
PERMANENT ENTRANCE – RICHMOND RD – SIGHT DISTANCE LEFT PROFILE VIEW

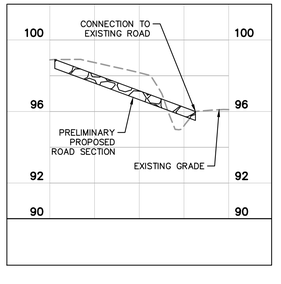


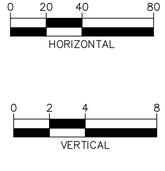


ENTRANCE PROFILE









No.	REVISIONS	DATE	BY

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PHONE: 804-673-3882
WWW.KIMLEY-HORN.COM

LICENSED PROFESSIONAL ENGINEER

KHA PROJECT	113526017
DATE	OCTOBER 2024
SCALE	AS SHOWN
DESIGNED BY	NLR
DRAWN BY	ZML
CHECKED BY	MLH
DATE:	

ENTRANCE AND SIGHT DISTANCE EXHIBIT (SHEET 1 OF 2)

HEDERA SOLAR
PREPARED FOR
HEXAGON ENERGY, LLC
JAMES CITY COUNTY VA

SHEET NUMBER
EX-1

Plotted By: Wood, Grace Sheet Set: Kha Layout: EX-1 October 10, 2024 09:10:13am \\Kimley-Horn.com\AT_RIC\RIC_CIV\113526017 – Hedera Solar – James City County, VA\CAD\Exhibits\VDOT Entrance\VDOTEntrance_Hedera.dwg
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APPENDIX I: CONCEPTUAL STORMWATER AND EROSION AND SEDIMENT CONTROL PLAN

Enclosed.

MEMORANDUM

To:	James City County Stormwater & Resource Protection 101-E Mounts Bay Road Williamsburg, VA 23185
From:	Kimley-Horn and Associates, Inc.
Date:	July 5, 2024 Revised: November 5, 2024
Subject:	Hedera Solar Preliminary Stormwater Management Design

Kimley-Horn, on behalf of Hexagon Energy, presents the following stormwater management summary for the proposed Hedera Solar Project.

Introduction

Kimley-Horn serves as the engineering consultant for Hexagon Energy, who is proposing to develop a solar power generation facility in James City County, Virginia. The subject property is located along Richmond (State Route 60) and Ivy Hill Road (State Route 657) in Williamsburg, Virginia and will be called Hedera Solar.

Per FEMA FIRM Map Panels 51095C0038D and 51095C0039D the property is in Zone X, which is an area determined to be outside of a floodplain. The site contains delineated aquatic resources that will be avoided by the development. The existing topography of the majority of the area of the development contains slopes ranging from 2-10% with some areas exceeding 15%.

Kimley-Horn has conducted a preliminary analysis to determine how the site may satisfy the stormwater quantity and quality criteria established by the Code of Virginia as well as the regulations specified by James City County. This memorandum and accompanying exhibits outline a preliminary stormwater management design to accommodate the proposed site improvements associated with this development.

Stormwater Management Design

Stormwater management for this project will be designed to meet the quantity and quality requirements of the stormwater regulations as defined in 9VAC25-875 (Code of Virginia).

The proposed project is a solar power generation facility. The improvements to the site will include solar panels, a gravel access drive, equipment pads, and stormwater management

(SWM) facilities. In the post-developed condition, the existing wooded land cover will largely be converted to an urban development open-space condition. Conveyance channels along the perimeter of the development are proposed to collect and convey stormwater runoff to centralized stormwater ponds. The proposed ponds will detain and release the accumulated runoff at controlled outfalls to natural conveyance systems. The existing wetlands and natural streams will remain undisturbed. Publicly available topographic lidar data was used to delineate the major drainage areas within the project site and identify preliminary locations and sizes of downstream stormwater management (SWM) facilities. In the post-development condition, this site was divided into four drainage areas with the primary three areas managed by SWM facilities and the fourth representing improvements made at the site entrance. The proposed plan is illustrated on the attached exhibits, EX-1 and EX-3.

While the primary objective of the analysis performed by Kimley-Horn is to demonstrate potential compliance with stormwater regulations, it is anticipated that the permanent SWM features will be used in a modified form during construction as erosion and sediment control (ESC) measures. The final ESC design will be developed and reviewed by the County during the site plan review phase to ensure compliance with Virginia Erosion and Sediment Control code and Minimum Standards.

Water Quantity

The existing land cover analysis was performed using information from aerial imagery. The landcover of the existing site has historically been wooded. This data is used to establish the existing curve number (CN) at each point of analysis. The curve number is based on land cover and hydrologic soil group (HSG). Per the NRCS soil report, the soils are mostly hydrologic soil group B, C, and D within the property and contributing offsite drainage areas. Pre-development land cover and drainage areas are illustrated on the attached exhibit, EX-2.

The proposed land cover analysis is performed by applying the post-developed condition of urban open space within the limits of disturbance in areas where impervious cover is not proposed. In compliance with county regulations, solar panels, in addition to access roads and equipment pads, have been considered unconnected impervious area. The turf and impervious curve numbers are applied to the areas based on the HSG as discussed above. Table 1 summarizes the weighted CN applied to each post-development drainage area. Post-development land cover and drainage areas are illustrated on the attached exhibit, EX-3.

Table 1 - Post-developed Drainage Area Summary

POST-DEVELOPED DRAINAGE AREA SUMMARY										
DRAINAGE AREA LABEL	TOTAL DRAINAGE AREA (AC.)	OVERALL CN	*Land Cover:*	IMPERV.	Urban Open Space (A)	Urban Open Space (B)	Urban Open Space (C)	Urban Open Space (D)	Woods (A)	Woods (B)
			CN:	98	39	61	74	80	30	55
DA-02	10.29	74		2.67	2.12	1.17	0.30	4.03	0.00	0.00
DA-04	4.06	60		0.24	0.61	0.90	0.00	1.43	0.87	0.01
DA-05	14.76	65		3.46	4.41	1.87	0.00	3.73	1.14	0.15

This preliminary plan proposes three stormwater management facilities that will be converted to permanent wet ponds following construction. The permanent wet ponds will be designed to detain increased volumes of runoff and release the runoff at a controlled rate to the adjacent natural conveyance systems. The ponds are preliminarily sized to achieve compliance with Channel and Flood Protection water quantity criteria established under 9VAC25-875-600 in the Code of Virginia. For Channel Protection, at each pond outfall location, the outfall will be designed to release a post-development peak flow rate below the minimum allowable rate established by the Energy Balance Equation for the 1-year, 24-hour storm event. To comply with Flood Protection criteria, the peak flow rate at each pond outfall for the 10-year, 24-hour storm event will be released at a rate less than or equal to the pre-development flow rate. Supporting calculations demonstrating adequate compliance with water quantity regulations be required and reviewed by the County during site plan review.

Water Quality

Stormwater Quality compliance will be met by determining the required phosphorus load removal using the Virginia Runoff Reduction Method (VRRM). Per County requirements, off-site nutrient credits and conserved “Forest” that is hydraulically disconnected from the development may not be utilized to meet the required phosphorus load reduction. Consequently, phosphorus reduction for this project will be achieved via on-site quality best management practices (BMPs) such as wet ponds, grassed channels, and/or dry swales that are designed to remove a calculated level of nutrients from the stormwater runoff within the project area.

To analyze water quality treatment compliance, this project was analyzed as a “New Development” project, and forest, mixed open, managed turf, and impervious areas were tabulated for post-developed conditions and input into the VRRM Version 4.1 spreadsheet. For purposes of the water quality calculations, pervious area within the fence line is designated as “Managed Turf”, pervious area outside of the fence line is anticipated to require less routine maintenance and is designated as “Mixed Open”, and the site access roads and panel areas are designated as “Impervious Cover”. The land cover classifications used to calculate the required phosphorus load reduction are illustrated on the attached exhibit, EX-

4. Using the preliminary site layout provided by Hexagon Energy, the proposed site improvements require a phosphorus reduction of 9.68 pounds per year (Figure 1).

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest (acres) -- undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) -- undisturbed/infrequently maintained grass or shrub land	2.02	2.25	0.30	4.26	8.83
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	5.12	1.69	0.00	4.93	11.74
Impervious Cover (acres)	2.53	0.70	0.59	2.55	6.37
					26.94

Post-Development Requirement for Site Area	
TP Load Reduction Required (lb/yr)	9.68

Figure 1 - VRRM V4.1 output for TP Load Reduction Required

For this preliminary design, phosphorus reduction is achieved by proposing one Level 2 Wet Pond, two Level 1 Wet Ponds, and a network of compost-amended grass channels. The accompanying VRRM output is attached to this memorandum.

Wet ponds are proposed due to their efficiency in nutrient removal for larger drainage areas. Any proposed quality BMP will be designed to meet the specifications outlined in the Virginia Stormwater Management Handbook, Version 1.0. It is understood that alternative facilities may be considered during site plan review that may also provide adequate water quality treatment. This preliminary design is intended to demonstrate a feasible option to satisfy water quality compliance. The proposed facilities may undergo revisions during site plan review pending county approval.

Conclusion

Kimley-Horn has developed the preliminary stormwater design for the Hedera Solar Project in James City County, Virginia, at the request of Hexagon Energy. The objective of this design is to demonstrate the potential compliance measures that the project can adopt to meet the stormwater management requirements set by both the county and the state. This design demonstrates that water quality and water quantity criteria may be met through the use of permanent best management practices (BMPs) such as grass channels and wet ponds. While this preliminary effort demonstrates the project's potential to satisfy the required stormwater criteria, the final design may undergo changes during the site plan review process in coordination with the county. However, the approach summarized in this narrative provides reassurance that the project has the capability to meet the necessary requirements.

RICHMOND ROAD
(ROUTE 60)

PROPOSED STORMWATER
CONVEYANCE CHANNEL (TYP.)

PROPOSED STORMWATER
MANAGEMENT FACILITY (TYP.)

SWM-A

SWM-B

SWM-C

PANEL LIMITS (TYP.)

PERIMETER FENCING
(TYP.)

IVY HILL ROAD (ROUTE 657)

PROPOSED GRAVEL
ACCESS ROAD

DELINEATED WETLAND (TYP.)

LIMITS OF RESOURCE
PROTECTION AREA (RPA) (TYP.)

DELINEATED STREAM (TYP.)

12' BMP ACCESS ROAD (TYP.)

LIMITS OF
DISTURBANCE (TYP.)

PROPOSED STORMWATER
CONVEYANCE CHANNEL (TYP.)

BUILDING SETBACK
(TYP.)

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINES
- BUILDING SETBACK
- PRELIMINARY LIMITS OF DISTURBANCE
- 20' GRAVEL ACCESS ROAD
- 12' BMP ACCESS ROAD
- PROPOSED FENCELINE
- PROPOSED PANELS
- WETLAND
- 100' RPA BUFFER
- STORMWATER CONVEYANCE

No.	REVISIONS	DATE	BY
1	UPDATED PER COUNTY COMMENTS	11/5/2024	MLH

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2035 MAYWILL STREET, SUITE 200, RICHMOND, VA 23230
PHONE: 804-673-3882
WWW.KIMLEY-HORN.COM

NOT FOR CONSTRUCTION

KHA PROJECT
113526017

DATE
11/5/2024

SCALE AS SHOWN

DESIGNED BY MLH
DRAWN BY ZML
CHECKED BY MLH

PRELIMINARY STORMWATER MANAGEMENT EXHIBIT

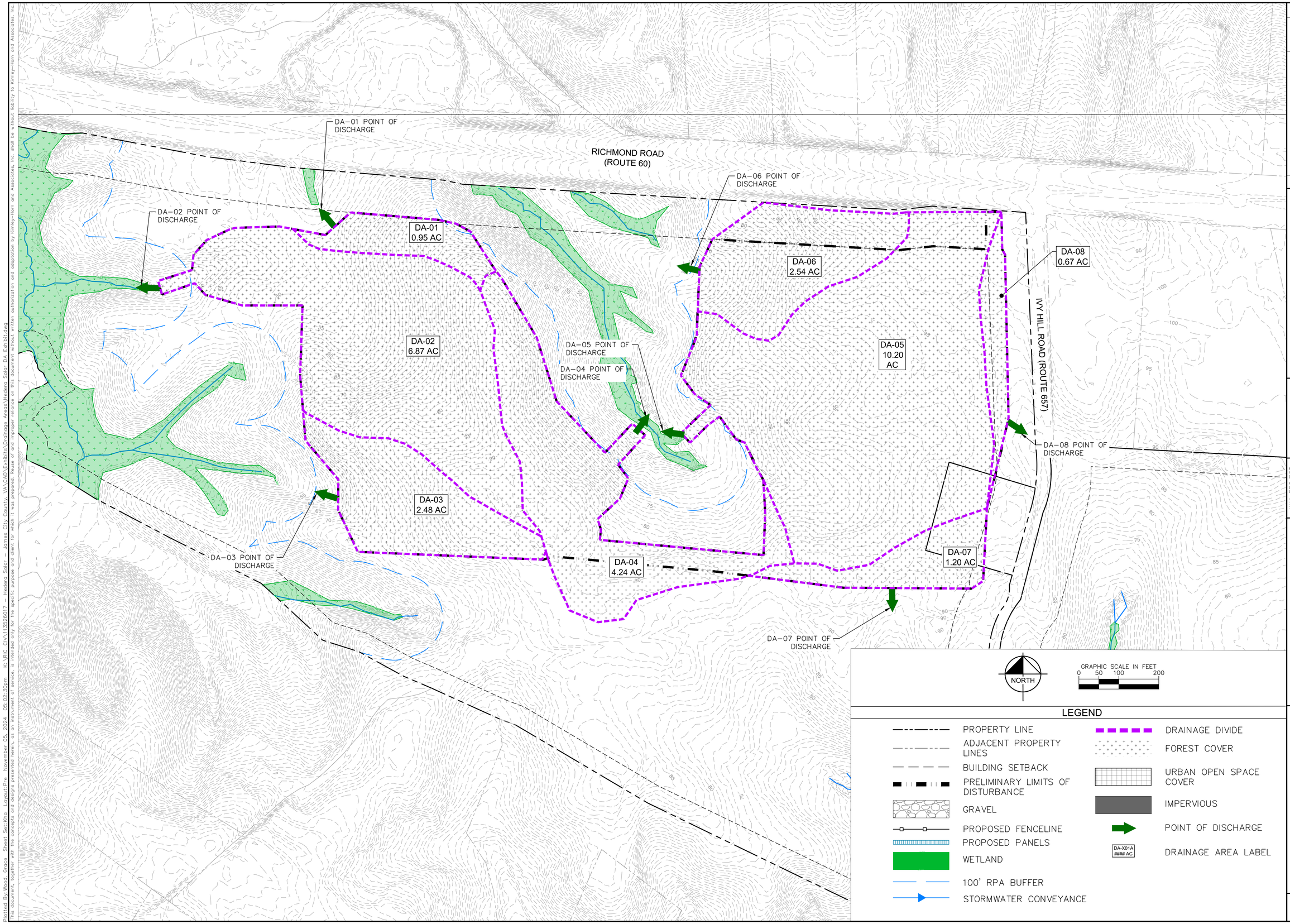
HEDERA SOLAR

PREPARED FOR
HEXAGON ENERGY, LLC

JAMES CITY COUNTY VA

SHEET NUMBER
EX-1

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PHONE: 804-673-3882
WWW.KIMLEY-HORN.COM

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DATE 11/5/2024
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PRE-DEVELOPMENT DRAINAGE AREA EXHIBIT

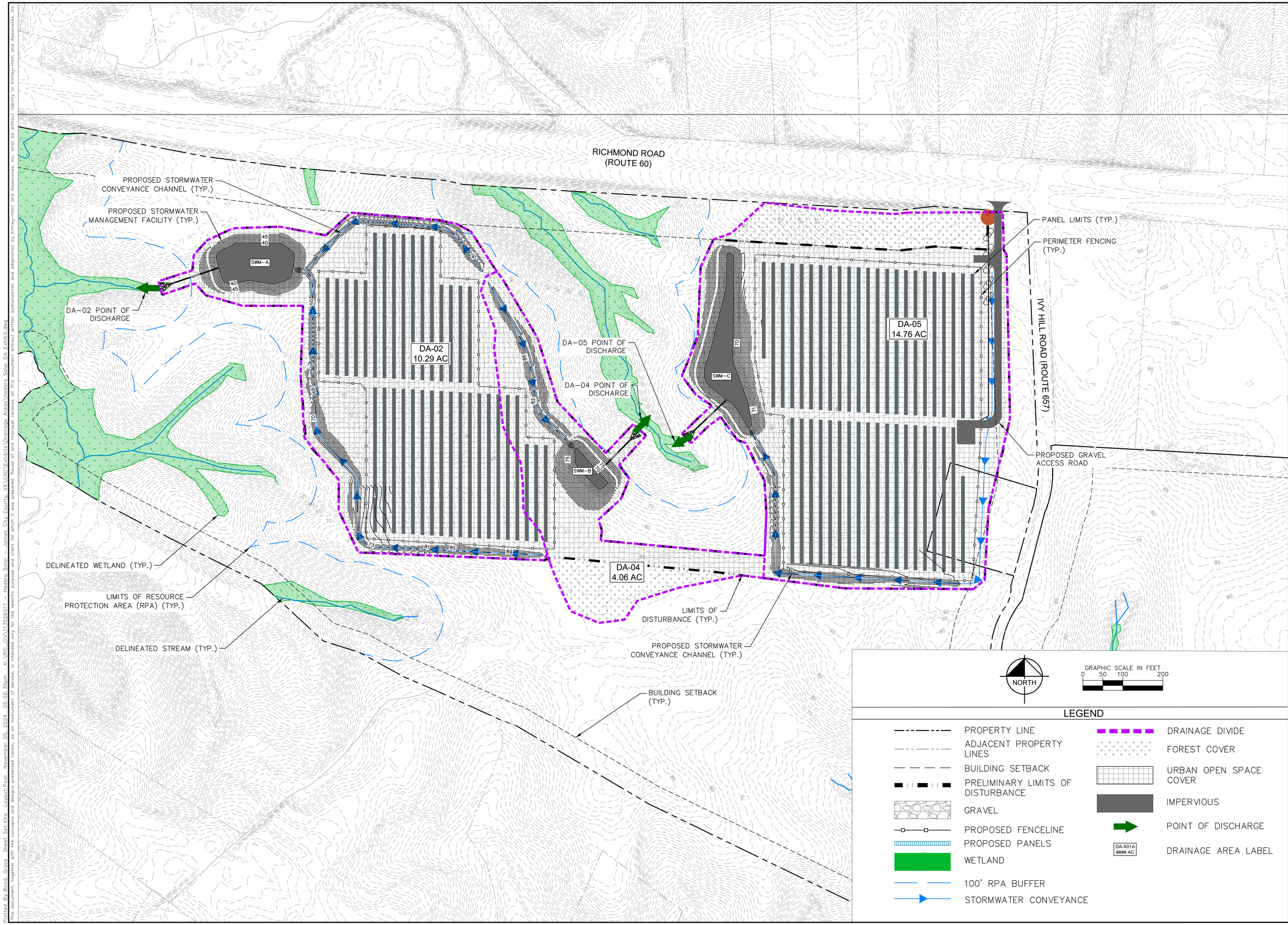
HEDERA SOLAR

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JAMES CITY COUNTY VA

SHEET NUMBER
EX-2

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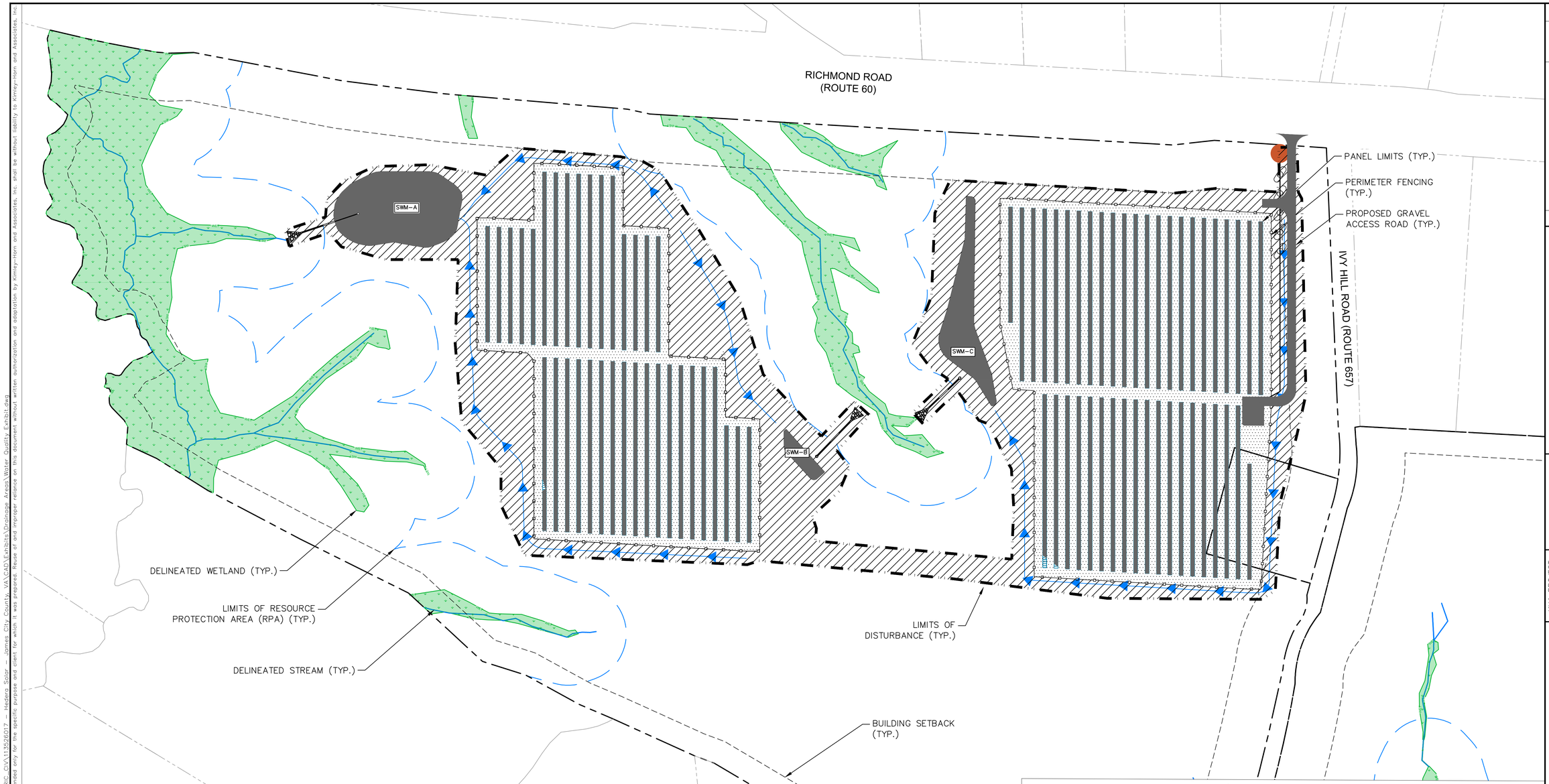
POST-DEVELOPMENT DRAINAGE AREA EXHIBIT

HEDERA SOLAR
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JAMES CITY COUNTY VA

SHEET NUMBER
EX-3

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Project Name: Hedera Solar
Date: 11/5/2024

CLEAR ALL
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BMP Design Specifications List: 2024 Stds & Specs

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
Forest (acres) -- undisturbed, protected forest or reforested land					0.00
Mixed Open (acres) -- undisturbed/infrequently maintained grass or shrub land	2.02	2.25	0.30	4.26	8.83
Managed Turf (acres) -- disturbed, graded for yards or other turf to be mowed/managed	5.12	1.69	0.00	4.93	11.74
Impervious Cover (acres)	2.53	0.70	0.59	2.55	6.37
					26.94

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	9.68

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINES
- BUILDING SETBACK
- PRELIMINARY LIMITS OF DISTURBANCE
- GRAVEL
- PROPOSED FENCELINE
- PROPOSED PANELS
- WETLAND
- 100' RPA BUFFER
- STORMWATER CONVEYANCE
- MIXED OPEN
- MANAGED TURF
- IMPERVIOUS

No.	REVISIONS	DATE	BY
1	UPDATED PER COUNTY COMMENTS	11/5/2024	MLH

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PHONE: 804-673-3882
WWW.KIMLEY-HORN.COM

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KHA PROJECT 113526017
DATE 11/5/2024
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CHECKED BY MLH

STORMWATER QUALITY PLAN

HEDERA SOLAR
PREPARED FOR
HEXAGON ENERGY, LLC
JAMES CITY COUNTY VA

SHEET NUMBER
EX-4

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DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - **Version 4.1**

Project Name:	**Hedera Solar**
Date:	**11/5/2024**
BMP Design Specifications List:	**2024 Stds & Specs**

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data input cells
constant values
calculation cells
final results

Site Information

Post-Development Project (Treatment Volume and Loads)

Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals
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Impervious Cover (acres)	2.53	0.70	0.59	2.55	6.37
					26.94

Post-Development Requirement for Site Area

TP Load Reduction Required (lb/yr)	**9.68**

LAND COVER SUMMARY -- POST DEVELOPMENT

Land Cover Summary

Forest Cover (acres)	0.00
Weighted Rv (forest)	0.00
% Forest	0%
Mixed Open (acres)	8.83
Weighted Rv (mixed open)	0.12
% Mixed Open	33%
Managed Turf Cover (acres)	11.74
Weighted Rv (turf)	0.20
% Managed Turf	44%
Impervious Cover (acres)	6.37
Rv (impervious)	0.95
% Impervious	24%
Site Area (acres)	**26.94**
Site Rv	**0.35**

Treatment Volume and Nutrient Loads

Treatment Volume (acre-ft)	0.7898
Treatment Volume (cubic feet)	34,402
TP Load (lb/yr)	16.68
TN Load (lb/yr)	177.91

Drainage Area A

VRRM 4.1, 2024

Drainage Area A Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv	Composite Loading P	Composite Loading N
Forest (acres)					0.00	0.00	0.00	0.00
Mixed Open (acres)	0.25	0.61	0.30	1.85	3.01	0.13	0.41	1.86
Managed Turf (acres)	1.87	0.57		2.17	4.61	0.20	0.69	7.32
Impervious Cover (acres)	0.81	0.22	0.60	1.04	2.67	0.95	0.86	12.33
				Total	10.29			

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. A (lb/yr): 6.69
Post Development Treatment Volume in D.A. A (ft³): 14,074

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft³)	Runoff Reduction (ft³)	Remaining Runoff Volume (ft³)	Total BMP Treatment Volume (ft³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)																			
1.a. Vegetated Roof #1 (P-FIL-02)	45					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (P-FIL-02)	60					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)																			
2.a. Simple Disconnection to A/B Soils (P-FIL-01)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (P-FIL-01)	25				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (P-BAS-04)	0				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)																			
3.a. Permeable Pavement #1 (P-FIL-03)	45				0	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (P-FIL-03)	75					0	0	0	25		0.00	0.00	0.00		25		0.00	0.00	0.00
4. Grass Channel (RR)																			
4.a. Grass Channel A/B Soils (P-CNV-01)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (P-CNV-01)	10				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (P-FIL-08)	20	2.26	3.46	2.00	0	2,111	8,444	10,555	15	0.00	5.01	1.60	3.41	15.d. Wet Pond #2 (Coastal Plain)	20	0.00	54.22	19.52	34.70
5. Dry Swale (RR)																			
5.a. Dry Swale #1 (P-CNV-02)	40				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (P-CNV-02)	60				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention (RR)																			
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 or Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration (RR)																			
7.a. Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond (RR)																			
8.a. ED #1 (P-BAS-03)	0				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (P-BAS-03)	15				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space (RR)																			
9.a. Sheetflow to Conservation Area, A/B Soils (P-FIL-07)	75				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area, C/D Soils (P-FIL-07)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec P-FIL-07 & P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
10. Regenerative Stormwater Conveyance																			
10.a. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Tree BMP																			
11.a. Trees over Pervious, A/B (P-FIL-09)	16				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.b. Trees over Pervious, C/D (P-FIL-09)	12				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.c. Trees over Impervious (P-FIL-09)	3.5				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac): 2.00 — AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac): 2.26 — AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac): 3.46 — AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. A (ft³): 2,111

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr): 6.69
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr): 1.60
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr): 5.08

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. A (ft³): 2,111
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr): 19.52

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

12. Wet Swale (no RR)																			
12.a. Wet Swale #1 (P-CNV-03)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Wet Swale #2 (P-CNV-03)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
13. Filtering Practices (no RR)																			
13.a Filtering Practice #1 (P-FIL-06)	0				0	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Filtering Practice #2 (P-FIL-06)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
14. Constructed Wetland (no RR)																			
14.a.Constructed Wetland #1 (P-BAS-01)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
14.b. Constructed Wetland #2 (P-BAS-01)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
15. Wet Ponds (no RR)																			
15.a. Wet Pond #1 (P-BAS-02)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
15.b. Wet Pond #1 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	45	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
15.c. Wet Pond #2 (P-BAS-02)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
15.d. Wet Pond #2 (Coastal Plain) (P-BAS-02)	0	0.75	1.15	0.67	8,444	0	11,963	11,963	65	3.41	1.67	3.30	1.78		30	34.70	18.07	15.83	36.94
16. Manufactured Treatment Devices (no RR)																			
16.a. Manufactured Treatment Device-Hydrodynamic	0				0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.b. Manufactured Treatment Device-Filtering	0				0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.c. Manufactured Treatment Device-Generic	0				0	0	0	0	20	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac): 2.67 — AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac): 3.01 — AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac): 4.61 — AREA CHECK: OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr): 9.68

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. A (lb/yr): 6.69
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr): 3.30
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr): 1.60
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. A (lb/yr): 4.91
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. A (lb/yr): 1.78

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr): 19.52
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. A (lb/yr): 15.83
TOTAL NITROGEN REMOVED IN D.A. A (lb/yr): 35.35

Drainage Area B

VRRM 4.1, 2024

Drainage Area B Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv	Composite Loading P	Composite Loading N
Forest (acres)					0.00	0.00	0.00	0.00
Mixed Open (acres)	0.49	0.90		1.08	2.47	0.12	0.37	1.69
Managed Turf (acres)	0.12			0.34	0.46	0.22	0.76	8.07
Impervious Cover (acres)	0.05	0.04		0.15	0.24	0.95	0.86	12.33
				Total	3.17			

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. B (lb/yr): 1.47
Post Development Treatment Volume in D.A. B (ft³): 2,291

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft³)	Runoff Reduction (ft³)	Remaining Runoff Volume (ft³)	Total BMP Treatment Volume (ft³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)																			
1.a. Vegetated Roof #1 (P-FIL-02)	45					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (P-FIL-02)	60					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)																			
2.a. Simple Disconnection to A/B Soils (P-FIL-01)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (P-FIL-01)	25				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (P-BAS-04)	0				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)																			
3.a. Permeable Pavement #1 (P-FIL-03)	45				0	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (P-FIL-03)	75					0	0	0	25		0.00	0.00	0.00		25		0.00	0.00	0.00
4. Grass Channel (RR)																			
4.a. Grass Channel A/B Soils (P-CNV-01)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (P-CNV-01)	10				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.c. Grass Channel with Compost Amended Soils as per specs (P-FIL-08)	20	1.85	0.35	0.18	0	344	1,375	1,718	15	0.00	1.10	0.35	0.75	15.b. Wet Pond #1 (Coastal Plain)	20	0.00	8.14	2.93	5.21
5. Dry Swale (RR)																			
5.a. Dry Swale #1 (P-CNV-02)	40				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (P-CNV-02)	60				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention (RR)																			
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 or Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration (RR)																			
7.a. Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond (RR)																			
8.a. ED #1 (P-BAS-03)	0				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (P-BAS-03)	15				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space (RR)																			
9.a. Sheetflow to Conservation Area, A/B Soils (P-FIL-07)	75				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area, C/D Soils (P-FIL-07)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec P-FIL-07 & P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
10. Regenerative Stormwater Conveyance																			
10.a. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Tree BMP																			
11.a. Trees over Pervious, A/B (P-FIL-09)	16				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.b. Trees over Pervious, C/D (P-FIL-09)	12				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.c. Trees over Impervious (P-FIL-09)	3.5				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac): 0.18 — AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac): 1.85 — AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac): 0.35 — AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. B (ft³): 344

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. B (lb/yr): 1.47
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr): 0.35
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr): 1.12

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. B (ft³): 344
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr): 2.93

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

12. Wet Swale (no RR)																			
12.a. Wet Swale #1 (P-CNV-03)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Wet Swale #2 (P-CNV-03)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
13. Filtering Practices (no RR)																			
13.a Filtering Practice #1 (P-FIL-06)	0				0	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Filtering Practice #2 (P-FIL-06)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
14. Constructed Wetland (no RR)																			
14.a.Constructed Wetland #1 (P-BAS-01)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
14.b. Constructed Wetland #2 (P-BAS-01)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
15. Wet Ponds (no RR)																			
15.a. Wet Pond #1 (P-BAS-02)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
15.b. Wet Pond #1 (Coastal Plain) (P-BAS-02)	0	0.62	0.12	0.06	1,375	0	1,948	1,948	45	0.75	0.37	0.50	0.61		20	5.21	2.71	1.58	6.34
15.c. Wet Pond #2 (P-BAS-02)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
15.d. Wet Pond #2 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
16. Manufactured Treatment Devices (no RR)																			
16.a. Manufactured Treatment Device-Hydrodynamic	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.b. Manufactured Treatment Device-Filtering	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.c. Manufactured Treatment Device-Generic	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac): 0.24 — AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac): 2.47 — AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac): 0.46 — AREA CHECK: OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr): 9.68

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. B (lb/yr): 1.47
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr): 0.50
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr): 0.35
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. B (lb/yr): 0.85
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. B (lb/yr): 0.61

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr): 2.93
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. B (lb/yr): 1.58
TOTAL NITROGEN REMOVED IN D.A. B (lb/yr): 4.51

Drainage Area C

VRRM 4.1, 2024

Drainage Area C Land Cover (acres)

	A Soils	B Soils	C Soils	D Soils	Totals	Land Cover Rv	Composite Loading P	Composite Loading N
Forest (acres)					0.00	0.00	0.00	0.00
Mixed Open (acres)	1.28	0.75		1.31	3.34	0.11	0.35	1.58
Managed Turf (acres)	3.13	1.12		2.42	6.67	0.19	0.66	7.02
Impervious Cover (acres)	1.68	0.44		1.34	3.46	0.95	0.86	12.33
				Total	13.47			

CLEAR BMP AREAS

Total Phosphorus Available for Removal in D.A. C (lb/yr): 8.52
Post Development Treatment Volume in D.A. C (ft³): 18,030

Stormwater Best Management Practices (RR = Runoff Reduction)

--Select from dropdown lists--

Practice	Runoff Reduction Credit (%)	Mixed Open Credit Area (acres)	Managed Turf Credit Area (acres)	Impervious Cover Credit Area (acres)	Volume from Upstream Practice (ft³)	Runoff Reduction (ft³)	Remaining Runoff Volume (ft³)	Total BMP Treatment Volume (ft³)	Phosphorus Removal Efficiency (%)	Phosphorus Load from Upstream Practices (lb)	Untreated Phosphorus Load to Practice (lb)	Phosphorus Removed By Practice (lb)	Remaining Phosphorus Load (lb)	Downstream Practice to be Employed	Nitrogen Removal Efficiency (%)	Nitrogen Load from Upstream Practices (lbs)	Untreated Nitrogen Load to Practice (lbs)	Nitrogen Removed By Practice (lbs)	Remaining Nitrogen Load (lbs)
1. Vegetated Roof (RR)																			
1.a. Vegetated Roof #1 (P-FIL-02)	45					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
1.b. Vegetated Roof #2 (P-FIL-02)	60					0	0	0	0		0.00	0.00	0.00		0		0.00	0.00	0.00
2. Rooftop Disconnection (RR)																			
2.a. Simple Disconnection to A/B Soils (P-FIL-01)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.b. Simple Disconnection to C/D Soils (P-FIL-01)	25				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.c. To Soil Amended Filter Path as per specifications (existing C/D soils) (P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.d. To Dry Well or French Drain #1, Micro-Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.e. To Dry Well or French Drain #2, Micro-Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
2.f. To Rain Garden #1, Micro-Bioretention #1 (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
2.g. To Rain Garden #2, Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
2.h. To Rainwater Harvesting (P-BAS-04)	0				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
2.i. To Stormwater Planter, Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
3. Permeable Pavement (RR)																			
3.a. Permeable Pavement #1 (P-FIL-03)	45				0	0	0	0	25	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
3.b. Permeable Pavement #2 (P-FIL-03)	75					0	0	0	25		0.00	0.00	0.00		25		0.00	0.00	0.00
4. Grass Channel (RR)																			
4.a. Grass Channel A/B Soils (P-CNV-01)	20				0	0	0	0	15	0.00	0.00	0.00	0.00		20	0.00	0.00	0.00	0.00
4.b. Grass Channel C/D Soils (P-CNV-01)	10				0	#REF!	#REF!	#REF!	15	0.00	#REF!	0.00	#REF!		20	0.00	#REF!	0.00	#REF!
4.c. Grass Channel with Compost Amended Soils as per specs (P-FIL-08)	20	2.51	5.00	2.60	0	2,704	10,818	13,522	15	0.00	6.39	2.04	4.35	15.b. Wet Pond #1 (Coastal Plain)	20	0.00	71.06	25.58	45.48
5. Dry Swale (RR)																			
5.a. Dry Swale #1 (P-CNV-02)	40				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
5.b. Dry Swale #2 (P-CNV-02)	60				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
6. Bioretention (RR)																			
6.a. Bioretention #1 or Micro-Bioretention #1 or Urban Bioretention (P-FIL-05)	40				0	0	0	0	25	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
6.b. Bioretention #2 or Micro-Bioretention #2 (P-FIL-05)	80				0	0	0	0	50	0.00	0.00	0.00	0.00		60	0.00	0.00	0.00	0.00
7. Infiltration (RR)																			
7.a. Infiltration #1 (P-FIL-04)	50				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
7.b. Infiltration #2 (P-FIL-04)	90				0	0	0	0	25	0.00	0.00	0.00	0.00		15	0.00	0.00	0.00	0.00
8. Extended Detention Pond (RR)																			
8.a. ED #1 (P-BAS-03)	0				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
8.b. ED #2 (P-BAS-03)	15				0	0	0	0	15	0.00	0.00	0.00	0.00		10	0.00	0.00	0.00	0.00
9. Sheetflow to Filter/Open Space (RR)																			
9.a. Sheetflow to Conservation Area, A/B Soils (P-FIL-07)	75				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.b. Sheetflow to Conservation Area, C/D Soils (P-FIL-07)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
9.c. Sheetflow to Vegetated Filter Strip, A Soils or Compost Amended B/C/D Soils (Spec P-FIL-07 & P-FIL-08)	50				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
10. Regenerative Stormwater Conveyance																			
10.a. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
10.b. Regenerative Stormwater Conveyance (P-CNV-04)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
11. Tree BMP																			
11.a. Trees over Pervious, A/B (P-FIL-09)	16				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.b. Trees over Pervious, C/D (P-FIL-09)	12				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
11.c. Trees over Impervious (P-FIL-09)	3.5				0	0	0	0	0	0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac): 2.60 AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac): 2.51 AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac): 5.00 AREA CHECK: OK.
TOTAL RUNOFF REDUCTION IN D.A. C (ft3): 0

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. C (lb/yr): 8.52
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr): 2.04
TOTAL PHOSPHORUS REMAINING AFTER APPLYING RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr): 6.48

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

TOTAL RUNOFF REDUCTION IN D.A. C (ft³): 0
NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr): 25.58

SEE WATER QUALITY COMPLIANCE TAB FOR SITE CALCULATIONS (Information Only)

12. Wet Swale (no RR)																			
12.a. Wet Swale #1 (P-CNV-03)	0				0	0	0	0	20	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
12.b. Wet Swale #2 (P-CNV-03)	0				0	0	0	0	40	0.00	0.00	0.00	0.00		35	0.00	0.00	0.00	0.00
13. Filtering Practices (no RR)																			
13.a. Filtering Practice #1 (P-FIL-06)	0				0	0	0	0	60	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
13.b. Filtering Practice #2 (P-FIL-06)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		45	0.00	0.00	0.00	0.00
14. Constructed Wetland (no RR)																			
14.a.Constructed Wetland #1 (P-BAS-01)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		25	0.00	0.00	0.00	0.00
14.b. Constructed Wetland #2 (P-BAS-01)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		55	0.00	0.00	0.00	0.00
15. Wet Ponds (no RR)																			
15.a. Wet Pond #1 (P-BAS-02)	0				0	0	0	0	50	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
15.b. Wet Pond #1 (Coastal Plain) (P-BAS-02)	0	0.84	1.67	0.87	10,818	0	15,325	15,325	45	4.35	2.13	2.91	3.56		20	45.48	23.69	13.83	55.33
15.c. Wet Pond #2 (P-BAS-02)	0				0	0	0	0	75	0.00	0.00	0.00	0.00		40	0.00	0.00	0.00	0.00
15.d. Wet Pond #2 (Coastal Plain) (P-BAS-02)	0				0	0	0	0	65	0.00	0.00	0.00	0.00		30	0.00	0.00	0.00	0.00
16. Manufactured Treatment Devices (no RR)																			
16.a. Manufactured Treatment Device-Hydrodynamic	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.b. Manufactured Treatment Device-Filtering	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00
16.c. Manufactured Treatment Device-Generic	0				0	0	0	0		0.00	0.00	0.00	0.00		0	0.00	0.00	0.00	0.00

TOTAL IMPERVIOUS COVER TREATED (ac): 3.46 AREA CHECK: OK.
TOTAL MIXED OPEN TREATED (ac): 3.34 AREA CHECK: OK.
TOTAL MANAGED TURF AREA TREATED (ac): 6.67 AREA CHECK: OK.

TOTAL PHOSPHORUS REMOVAL REQUIRED ON SITE (lb/yr): 9.68

TOTAL PHOSPHORUS AVAILABLE FOR REMOVAL IN D.A. C (lb/yr): 8.52
TOTAL PHOSPHORUS REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr): 2.91
TOTAL PHOSPHORUS REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr): 2.04
TOTAL PHOSPHORUS LOAD REDUCTION ACHIEVED IN D.A. C (lb/yr): 4.96
TOTAL PHOSPHORUS REMAINING AFTER APPLYING BMP LOAD REDUCTIONS IN D.A. C (lb/yr): 3.56

SEE WATER QUALITY COMPLIANCE TAB FOR SITE COMPLIANCE CALCULATIONS

NITROGEN REMOVED WITH RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr): 25.58
NITROGEN REMOVED WITHOUT RUNOFF REDUCTION PRACTICES IN D.A. C (lb/yr): 13.83
TOTAL NITROGEN REMOVED IN D.A. C (lb/yr): 39.42

Site Results (Water Quality Compliance) VRRM 4.1, 2024

Area Checks	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	AREA CHECK
FOREST (ac)	0.00	0.00	0.00	0.00	0.00	OK.
MIXED OPEN AREA (ac)	3.01	2.47	3.34	0.00	0.00	OK.
MIXED OPEN AREA TREATED (ac)	3.01	2.47	3.34	0.00	0.00	OK.
MANAGED TURF AREA (ac)	4.61	0.46	6.67	0.00	0.00	OK.
MANAGED TURF AREA TREATED (ac)	4.61	0.46	6.67	0.00	0.00	OK.
IMPERVIOUS COVER (ac)	2.67	0.24	3.46	0.00	0.00	OK.
IMPERVIOUS COVER TREATED (ac)	2.67	0.24	3.46	0.00	0.00	OK.
AREA CHECK	OK.	OK.	OK.	OK.	OK.	

Site Treatment Volume (ft^3)	34,402

Runoff Reduction Volume and TP By Drainage Area

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	TOTAL
RUNOFF REDUCTION VOLUME ACHIEVED (ft^3)	2,111	344	0	0	0	2,455
TP LOAD AVAILABLE FOR REMOVAL (lb/yr)	6.69	1.47	8.52	0.00	0.00	16.68
TP LOAD REDUCTION ACHIEVED (lb/yr)	4.91	0.85	4.96	0.00	0.00	10.72
TP LOAD REMAINING (lb/yr)	1.78	0.61	3.56	0.00	0.00	5.95
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	35.35	4.51	39.42	0.00	0.00	79.28

Total Phosphorus

FINAL POST-DEVELOPMENT TP LOAD (lb/yr)	16.68
TP LOAD REDUCTION REQUIRED (lb/yr)	9.68
TP LOAD REDUCTION ACHIEVED (lb/yr)	10.72
TP LOAD REMAINING (lb/yr):	5.96
REMAINING TP LOAD REDUCTION REQUIRED (lb/yr):	0.00

** TARGET TP REDUCTION EXCEEDED BY 1.04 LB/YEAR **

Total Nitrogen (For Information Purposes)

POST-DEVELOPMENT LOAD (lb/yr)	177.91
NITROGEN LOAD REDUCTION ACHIEVED (lb/yr)	79.28
REMAINING POST-DEVELOPMENT NITROGEN LOAD (lb/yr)	98.64

DEQ Virginia Runoff Reduction Method New Development Compliance Spreadsheet - Version 4.1

BMP Design Specifications List: **2024 Stds & Specs**

Site Summary

Project Title: Hedera Solar

Date: 11/05/2024

Site Land Cover Summary

	A soils	B Soils	C Soils	D Soils	Totals	% of Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0
Mixed Open (acres)	2.02	2.25	0.30	4.26	8.83	33
Managed Turf (acres)	5.12	1.69	0.00	4.93	11.74	44
Impervious Cover (acres)	2.53	0.70	0.59	2.55	6.37	24
					26.94	100

Site Tv and Land Cover Nutrient Loads

Site Rv	0.35
Treatment Volume (ft^3)	1
TP Load (lb/yr)	16.68
TN Load (lb/yr)	177.91

Total TP Load Reduction Required (lb/yr)	0.00

Site Compliance Summary

Total Runoff Volume Reduction (ft^3)	2,455
Total TP Load Reduction Achieved (lb/yr)	10.72
Total TN Load Reduction Achieved (lb/yr)	79.28
Remaining Post Development TP Load (lb/yr)	5.96
Remaining TP Load Reduction (lb/yr) Required	**0.00**

**** TARGET TP REDUCTION EXCEEDED BY 1.04 LB/YEAR ****

Drainage Area Summary

	D.A. A	D.A. B	D.A. C	D.A. D	D.A. E	Total
Forest (acres)	0.00	0.00	0.00	0.00	0.00	0.00
Mixed Open (acres)	3.01	2.47	3.34	0.00	0.00	8.82
Managed Turf (acres)	4.61	0.46	6.67	0.00	0.00	11.74
Impervious Cover (acres)	2.67	0.24	3.46	0.00	0.00	6.37
Total Area (acres)	**10.29**	**3.17**	**13.47**	**0.00**	**0.00**	**26.93**

APPENDIX J: VIEWSHED VISUALIZATIONS

Enclosed.

HEXAGON ENERGY

HEDERA SOLAR

VISUAL RENDERINGS

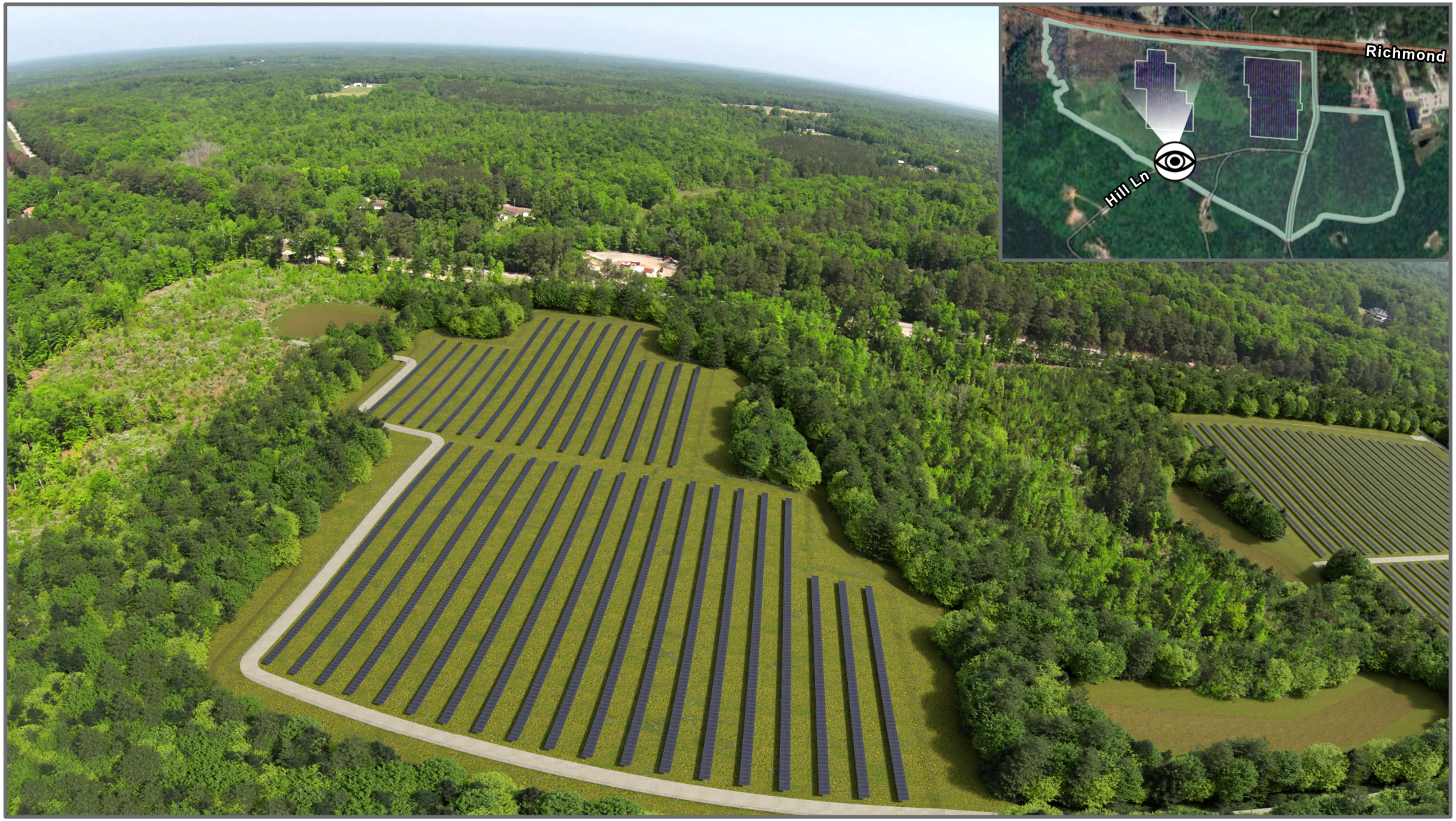


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HEXAGON ENERGY

HEDERA SOLAR

VISUAL RENDERINGS

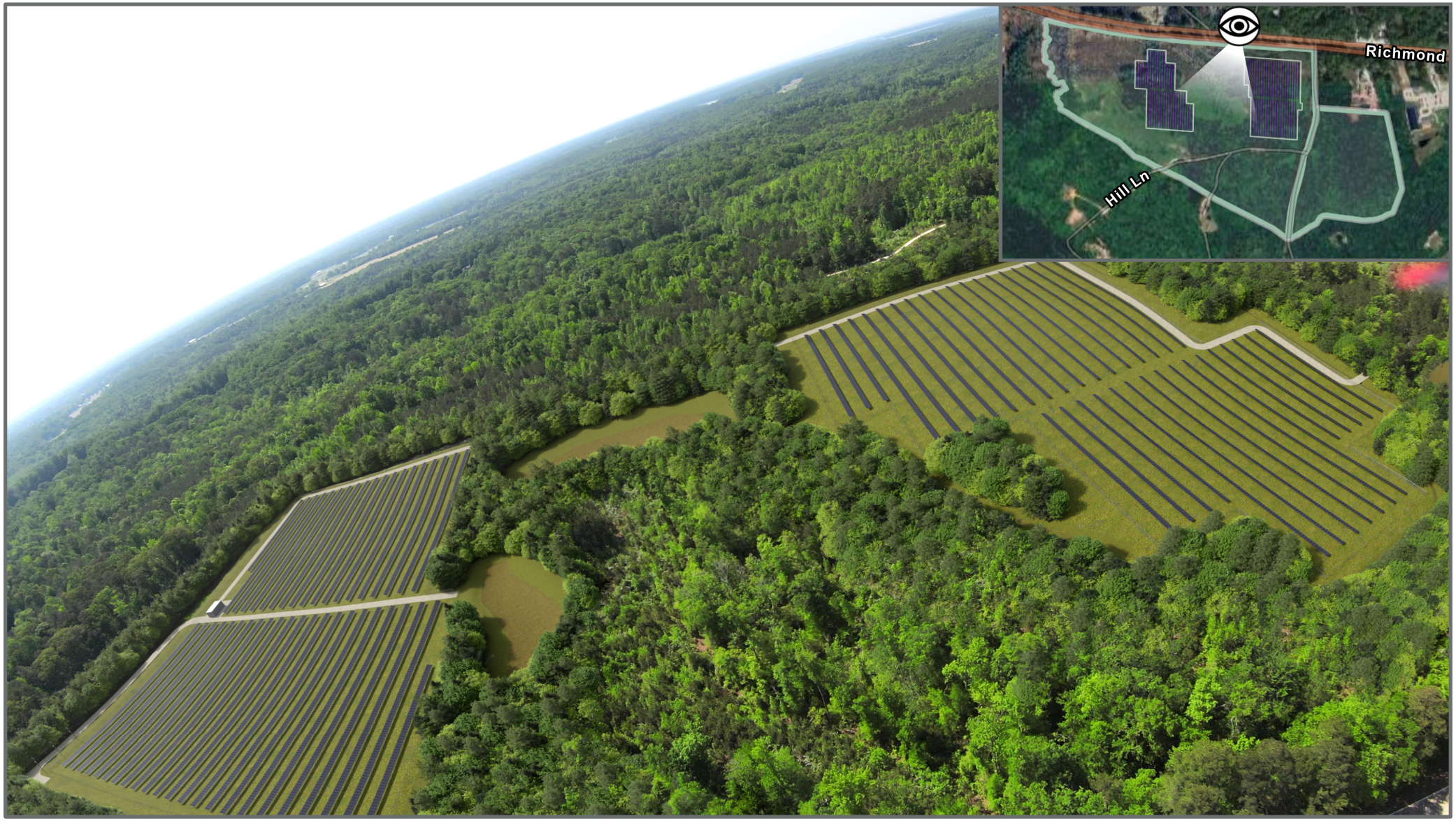


PHOTO TAKEN SUMMER 2024 | PHOTO HEIGHT: 205 METERS | JAMES CITY COUNTY, VA

HEXAGON ENERGY

HEDERA SOLAR

VISUAL RENDERINGS

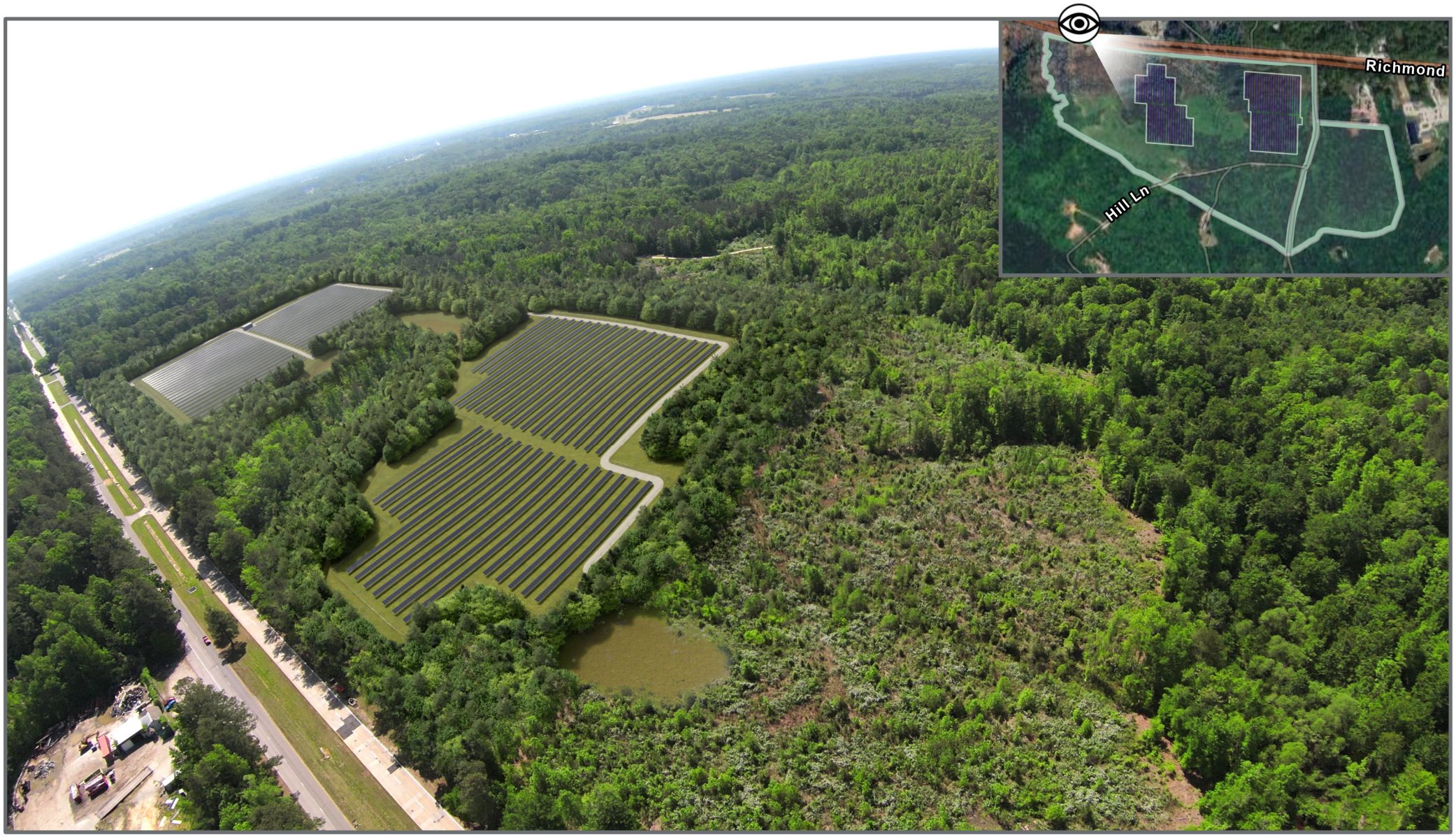


PHOTO TAKEN SUMMER 2024 | PHOTO HEIGHT: 205 METERS | JAMES CITY COUNTY, VA

HEXAGON ENERGY

HEDERA SOLAR

VISUAL RENDERINGS

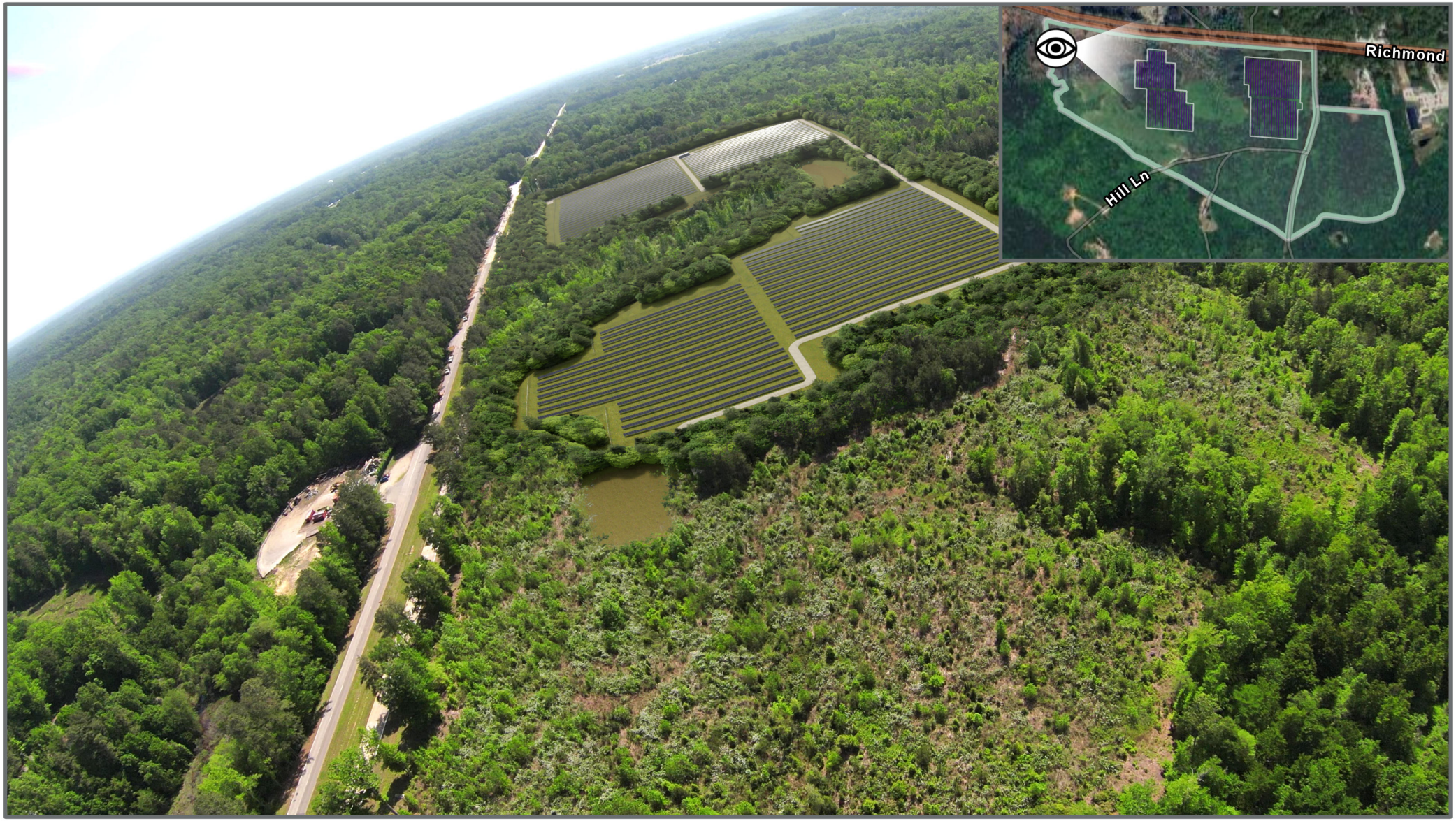


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HEXAGON ENERGY

HEDERA SOLAR

VISUAL RENDERINGS

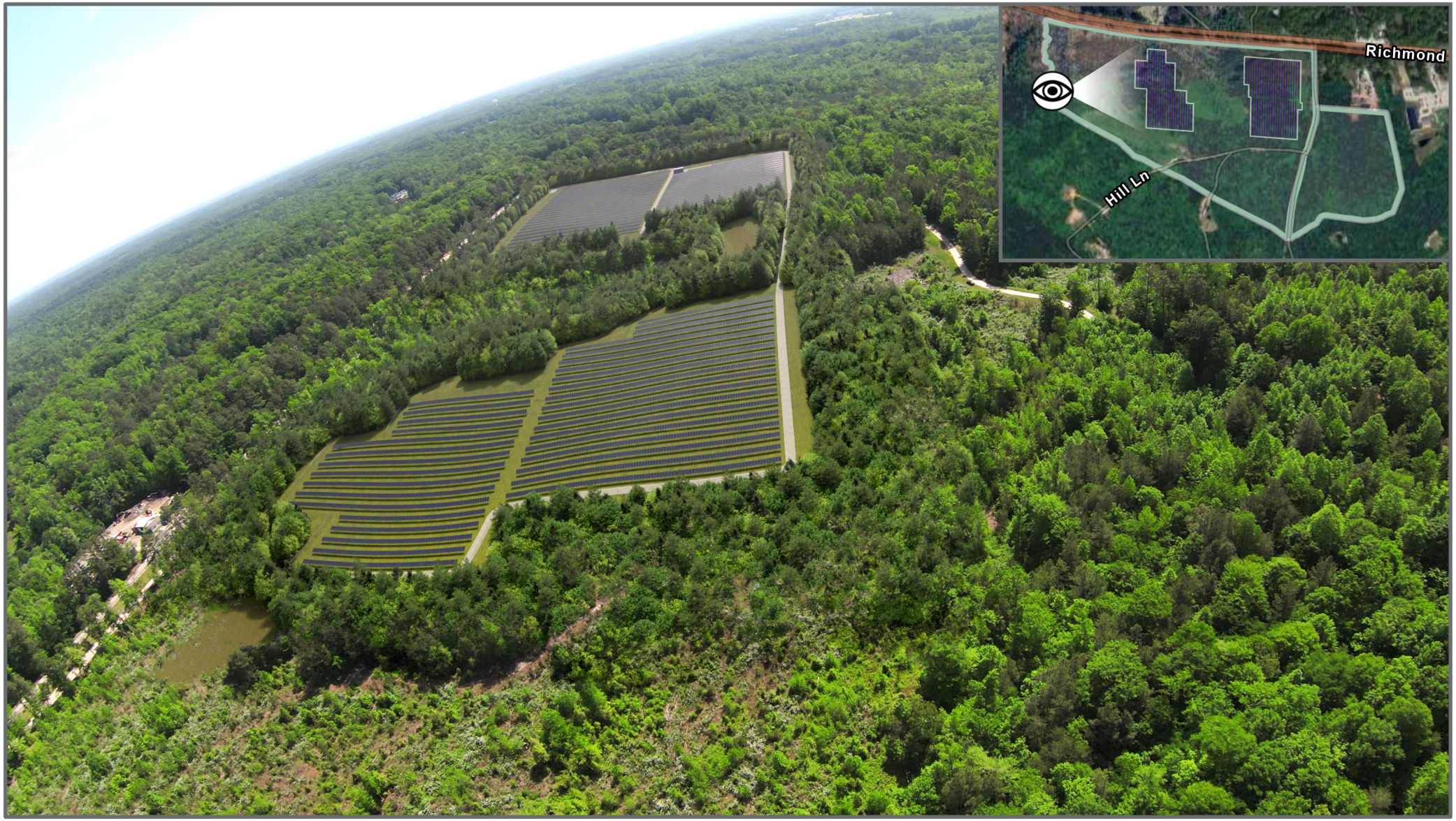


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HEXAGON ENERGY

HEDERA SOLAR

VISUAL RENDERINGS

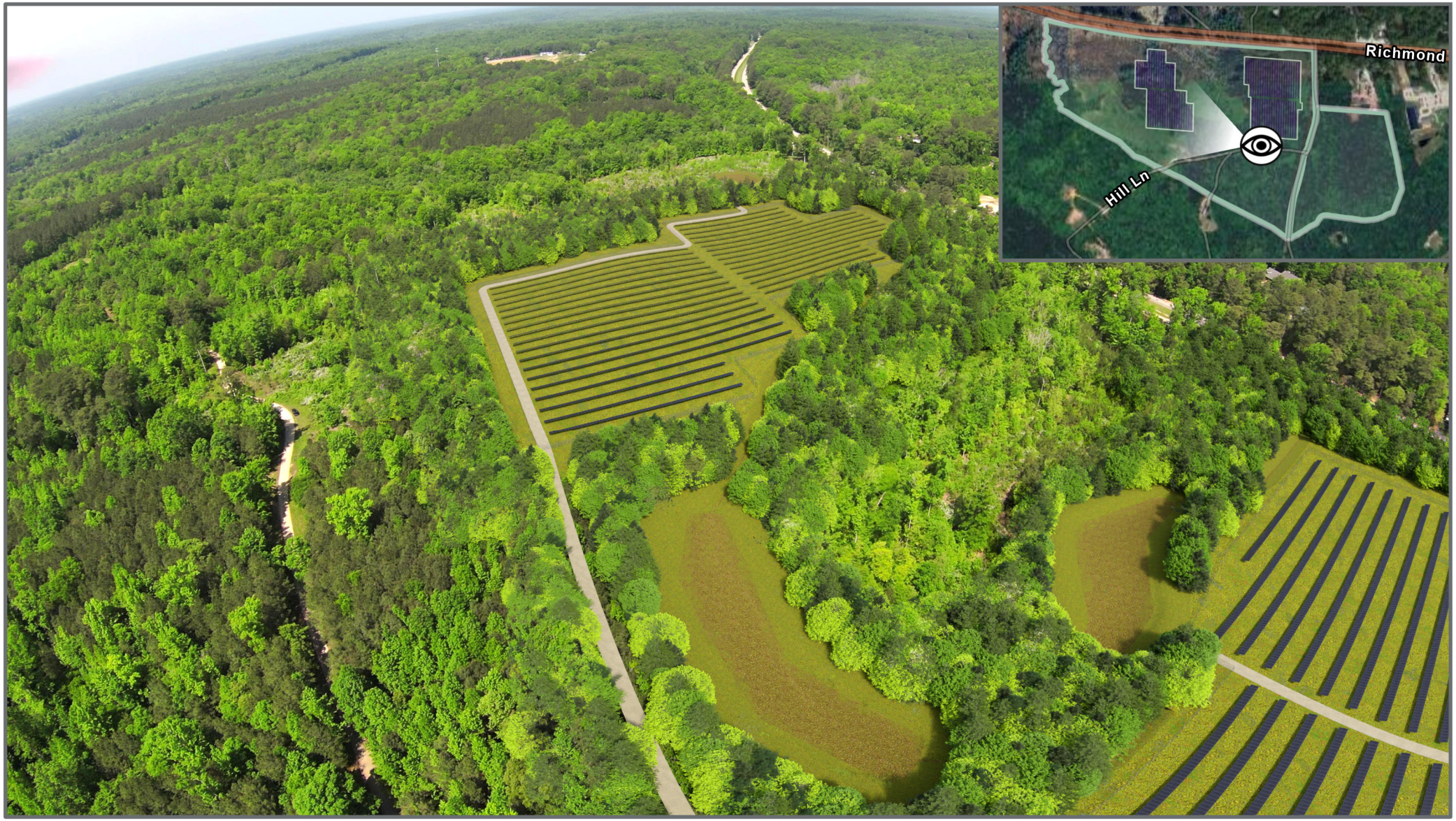


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HEXAGON ENERGY

HEDERA SOLAR

VISUAL RENDERINGS

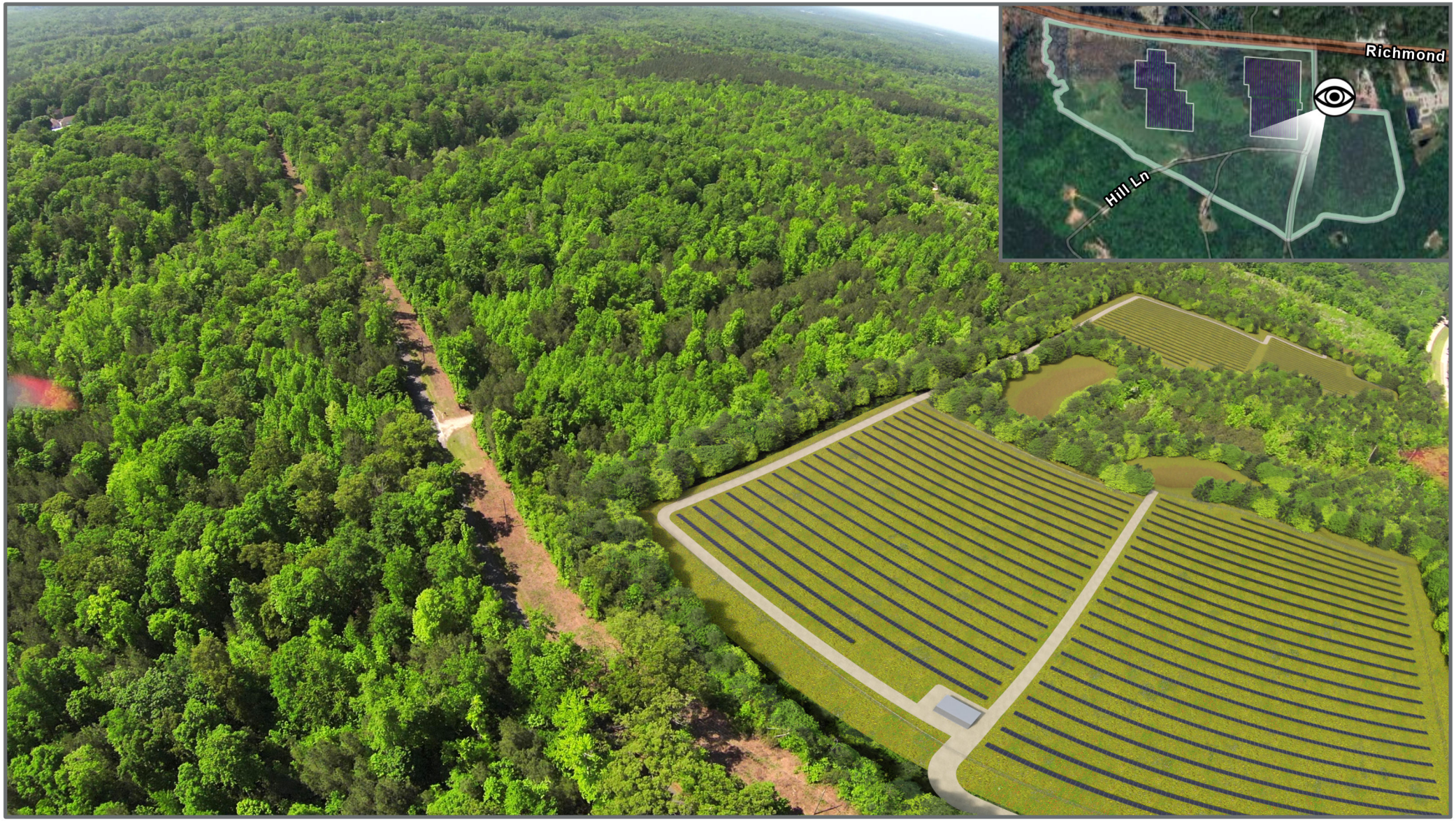


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HEXAGON ENERGY

HEDERA SOLAR

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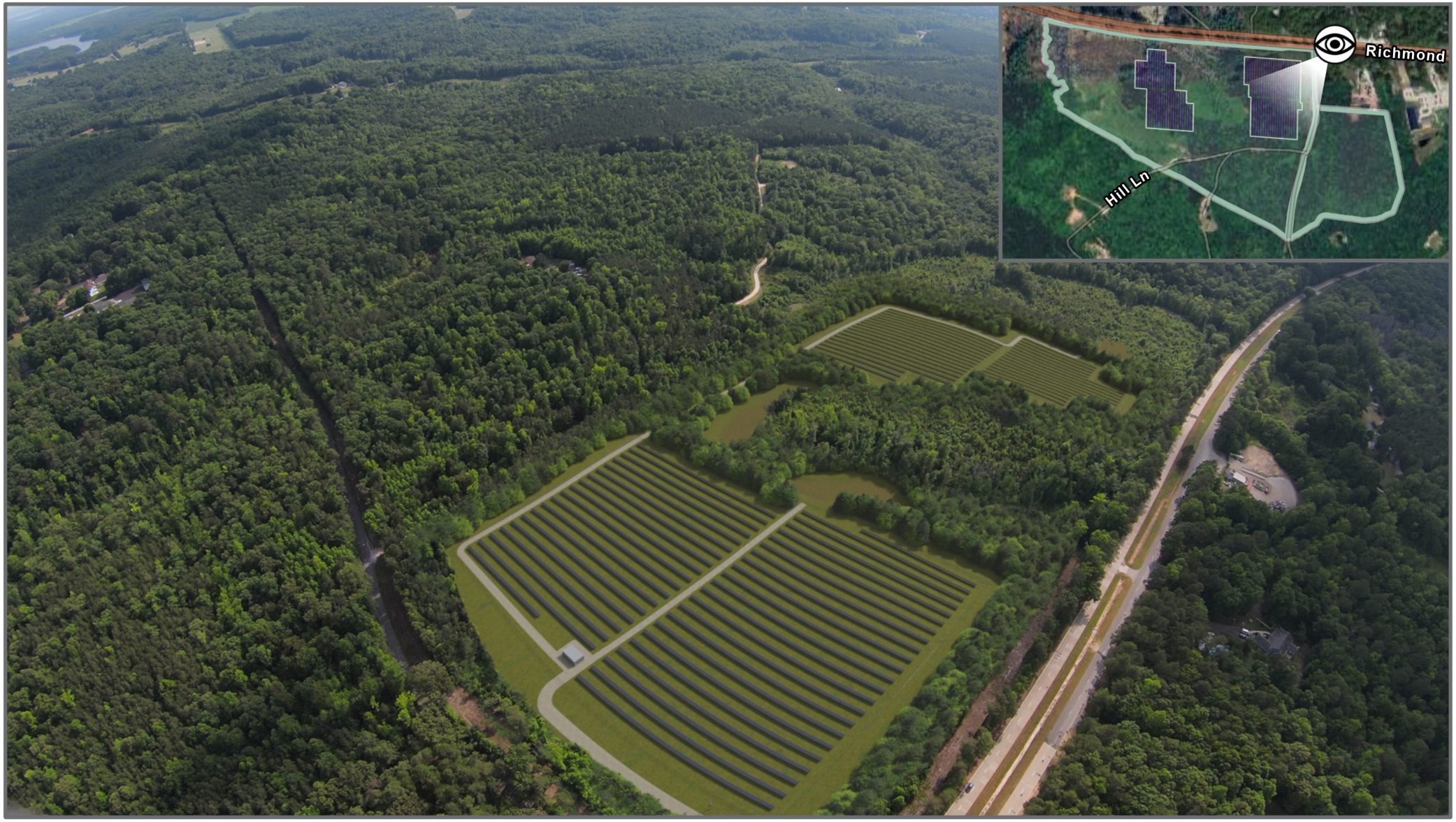


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HEXAGON ENERGY

HEDERA SOLAR

VISUAL RENDERINGS

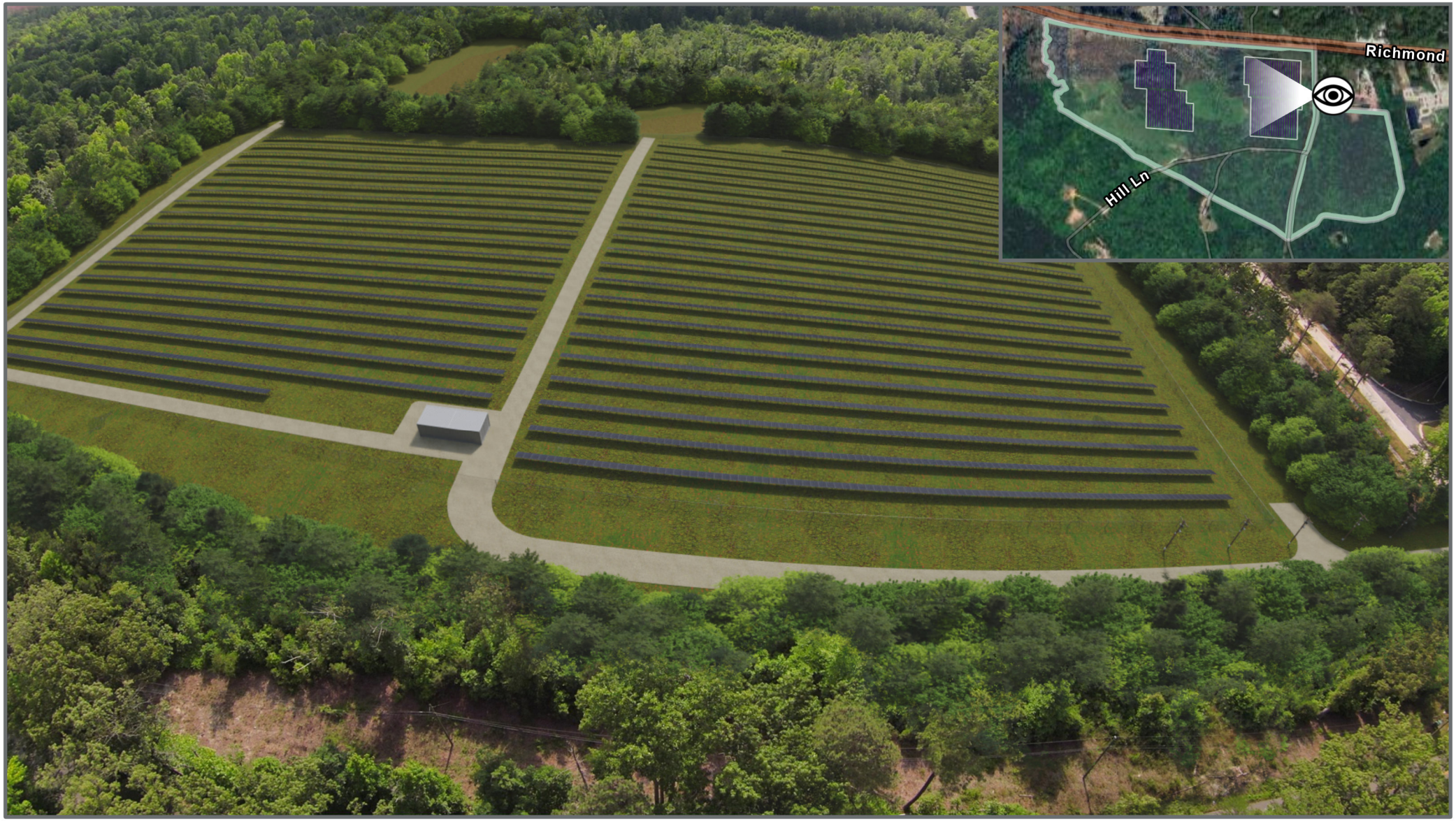


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HEXAGON ENERGY

HEDERA SOLAR

VISUAL RENDERINGS

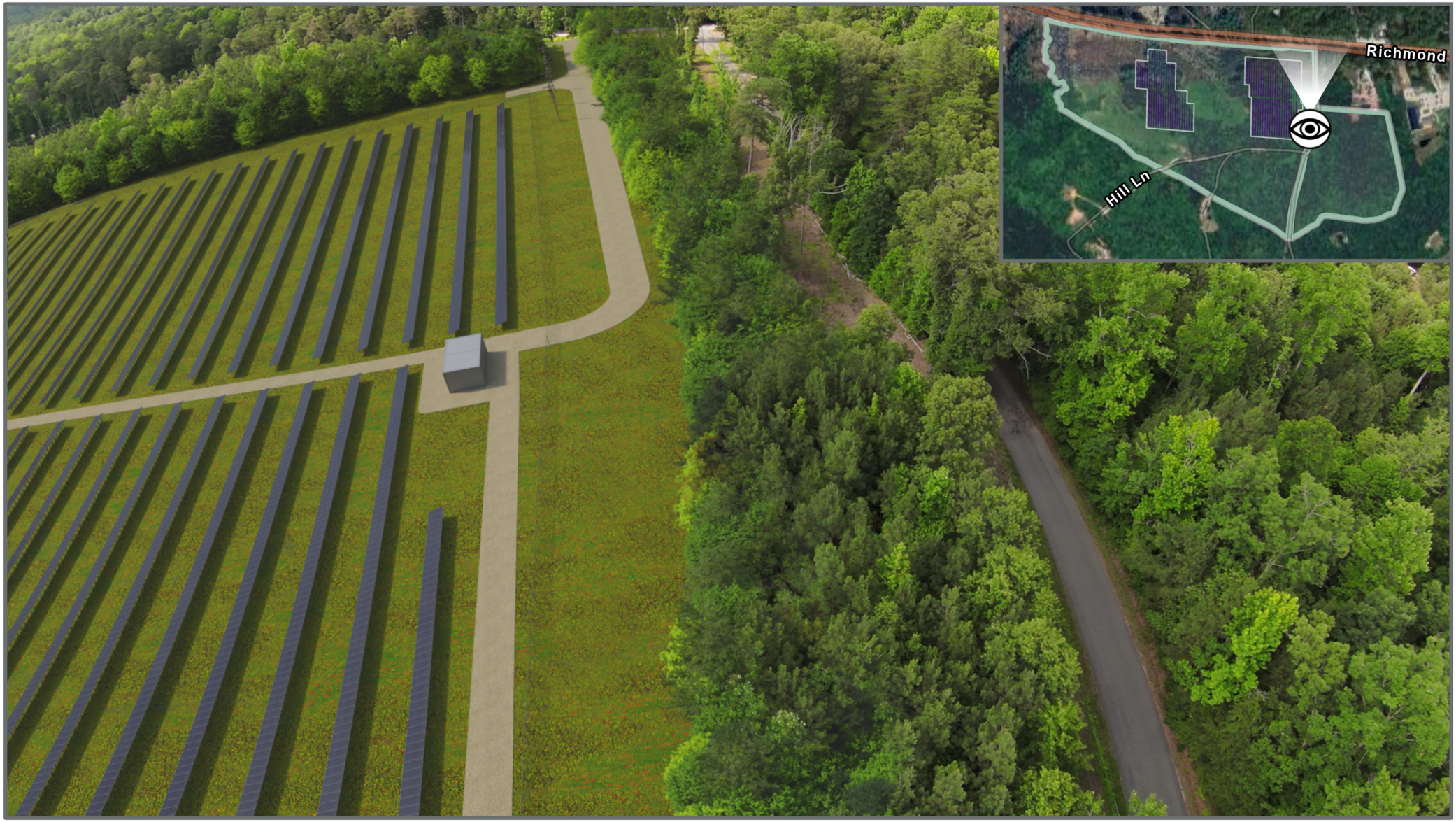


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APPENDIX K: STUDY WAIVERS

Enclosed.

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ENERGY

July 8th, 2024

Paul Holt
Director of Community Development/Planning, James City County
101 Mounts Bay Rd, Building A
Williamsburg, Virginia 23185

Re: Hedera Solar, A1/A2 Requirements Waiver Request

Dear Mr. Holt and the Community Development/Planning Department,

Please accept this letter pursuant to James City County's Zoning Ordinance Section 24-23.(a).(2).(d) as a written request to waive certain application submission requirements for the proposed Hedera Solar project (the Project). The Project is located at 101 Ivy Hill Road. We have outlined the specific provisions we request to be waived along with a brief description of why we believe they do not apply to Hedera Solar as proposed.

1) *24-23 a.1.b Water and Sewer Impact Survey* – Hedera Solar does not propose any new water or sewer service to the site property. We request a waiver on this requirement as it is not applicable.

2) *24-23 a.1.d/e Public Facilities Report*– Hedera Solar is proposed as a temporary land use for power generation that connects to the existing electrical grid on the site property. No other public facilities are required, and County facility impacts are not anticipated during the Project's operations and maintenance phase. Additionally, no on-site nor off-site public facilities are required for the Project. We request that this requirement be waived for application submission.

3) *24-23 a.1.g Preliminary Natural Resource Inventory* – County Staff has confirmed that the Project is not located on a property in the B1, B2, nor B3 area, therefore making this requirement not applicable. We request that this requirement be waived for application submission.

321 E. Main St. | Suite 500 | Charlottesville, VA 22902
P 434.227.5090 hexagon-energy.com

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(*Continued from previous page)*

4) *24-23 a.1.i Parks and recreation information* – The Project will have no effect on James City County's Parks and Recreation and therefore is not applicable. We request that this requirement be waived for application submission.

Thank you for your consideration of our application. Should you have any questions, please don't hesitate to contact me to discuss.

Respectfully,



Ester Rekhelman
Project Developer | Hexagon Energy, LLC
321 East Main Street, Suite 500
Charlottesville, VA 22903
erekhelman@hexagon-energy.com
(434) 218-0595

APPENDIX L: FISCAL IMPACT STUDY

Enclosed.

HEDERA SOLAR

ECONOMIC & FISCAL CONTRIBUTION TO JAMES CITY COUNTY, VIRGINIA



Prepared for

HEXAGON ENERGY

MANGUM economics

4510 COX ROAD, SUITE 202
GLEN ALLEN, VIRGINIA 23060
804-322-7777

MANGUMECONOMICS.COM

NOVEMBER 2024

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About Mangum Economics, LLC

Mangum Economics was founded in 2003 and since then, we have become known as a leader in industry analysis, economic impact assessment, policy and program evaluation, and economic and workforce strategy development. The Mangum Team specializes in producing objective and actionable quantitative economic research that our clients use for strategic decision making in a variety of industries and environments. We know that our clients are unique, and that one size does not fit all. As a result, we have a well-earned reputation for tailoring our analyses to meet the specific needs of specific clients, with a specific audience.

Most of our research falls into four general categories:

- **Energy:** The Mangum Team has produced analyses of the economic and fiscal impact of over 35 GW of proposed solar, wind, battery energy storage, and hydro projects spanning twenty-nine states. Among those projects was Dominion's 2.6 GW Coastal Virginia Offshore Wind project off of Virginia Beach. In addition, the Mangum Team has also performed economic and fiscal impact analyses for the natural gas, nuclear, oil, and pipeline industries.
- **Economic Development and Special Projects:** The Mangum Team has performed hundreds of analyses of proposed economic development projects. One recent example was an analysis of the proposed $2.3 billion Green City "net-zero eco district." The Mangum Team has also authored multiple economic development plans, including identifying industry recruitment opportunities created by the high-speed MAREA and BRUSA sub-sea cable landings in Virginia Beach.
- **Advanced Applied Technology:** The Mangum Team specializes in analyzing how advanced technology developments (like data centers, fiber networks, and advanced manufacturing plants) contribute to the state and local economies. We have worked with local governments, trade associations, developers, and operating firms across the country to show how investments in advanced critical infrastructure transform local economies across the country.
- **Policy Analysis:** The Mangum Team also has extensive experience in identifying and quantifying the intended and unintended economic consequences of proposed legislative and regulatory initiatives.

The Project Team

Martina Arel, M.B.A.
Director – Economic Development & Energy Research

Kai Amado
Research Analyst

Rebecca Kyle
Senior Research Analyst

A. Fletcher Mangum, Ph.D.
Founder and CEO

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Executive Summary

This report assesses the economic and fiscal contribution that the proposed Hedera Solar project would make to James City County, Virginia. The primary findings from that assessment are as follows:

1) **Hedera Solar is a proposed 3-megawatt (MW) alternating current (AC) solar photovoltaic power generating facility. The project would be located off of Richmond Road and Ivy Hill Road in James City County, Virginia. The total acreage to be leased for the project encompasses approximately 100 acres of timberland. The actively used, fenced-in portion of the solar site would be approximately 40 acres.**

2) **The proposed Hedera Solar project would make an economic contribution to James City County:**

   - The proposed Hedera Solar project would provide an estimated one-time pulse of economic activity to James City County during its construction phase supporting approximately:[1][2]
     - 6 direct and 2 indirect and induced local job years.
     - $478,500 in associated local wages and benefits.
     - $1.6 million in local economic output.
   - The proposed Hedera Solar project would provide an estimated annual economic impact to James City County during its ongoing operational phase supporting approximately:
     - < 1 direct, indirect, and induced local job.
     - $7,000 in associated local wages and benefits.
     - $21,200 in local economic output.

3) **The proposed Hedera Solar project would also make a fiscal contribution to James City County. The proposed project would generate approximately:[3]**

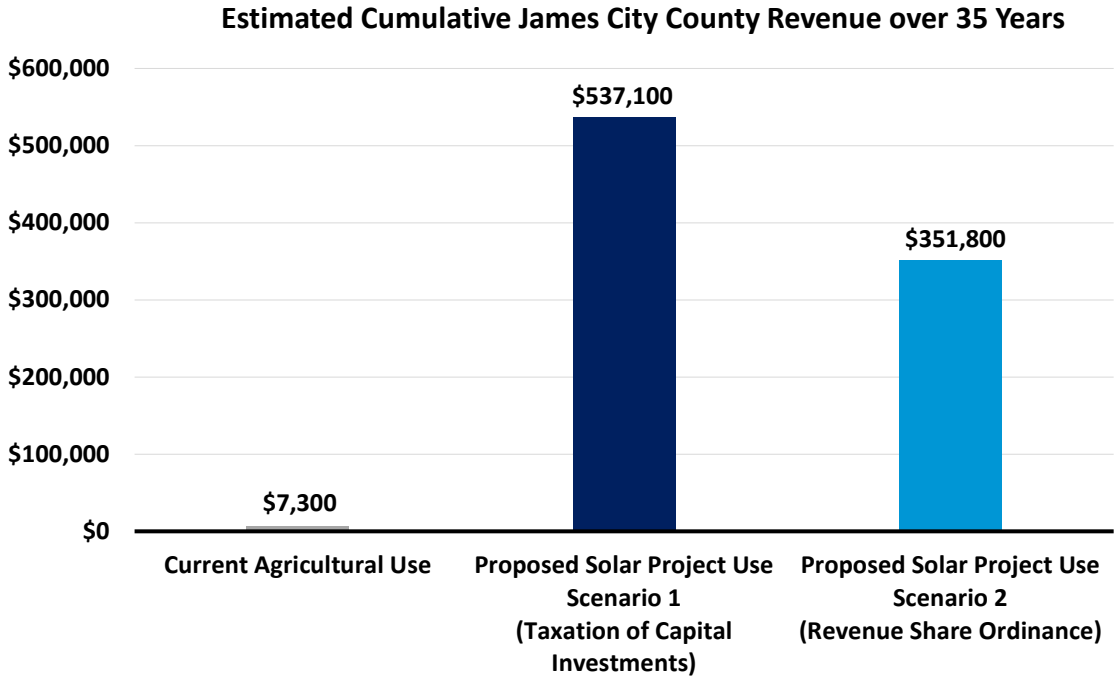
   - $42,800 in state and local tax revenue from the one-time pulse of economic activity associated with the project's construction.
   - $537,100 in cumulative county revenue over the facility's anticipated 35-year operational life assuming revenues are generated from the reassessment of the real property and the taxation of the associated capital investments (Scenario 1); or
   - $351,800 in cumulative county revenue over the facility's anticipated 35-year operational life assuming revenues are generated from the reassessment of the real property and payments associated with a locally adopted revenue share ordinance. The payments would

[1] A construction sector job, also referred to as a job year, is equal to one job over one year. It is used to denote employment on construction projects to account for the fact that actual on-site employment may vary over the period.
[2] It is important to note that construction sector jobs are not necessarily new jobs, but the investments made can also support a job during the construction of the project. Please note is not possible to know with certainty what proportion of jobs would go to county construction contractors or be filled by county residents.
[3] Please note that these estimated revenues do not include voluntary payments to the host locality, which are subject to negotiation between Hexagon Energy and James City County.

be based on the project's generation capacity and would include a 10 percent escalator every five years pursuant to legislation (Scenario 2).

4) **The proposed Hedera Solar project would have a significantly greater fiscal impact on James City County than the property generates in its current use:**

- The proposed Hedera Solar project would generate approximately $537,100 in cumulative county revenue over the facility's anticipated 35-year operational life under Scenario 1 and approximately $351,800 under Scenario 2, as compared to approximately $7,300 in cumulative county revenue in the property's current use – a difference of approximately $529,800 and $344,500. This constitutes a 74-fold and 48-fold increase over current revenues respectively.



The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing the quality of that information. However, because these estimates attempt to foresee the consequences of circumstances that have not yet occurred, it is not possible to be certain that they will be representative of actual events. These estimates are intended to provide a good indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

Introduction

This report assesses the economic and fiscal contribution that the proposed Hedera Solar project would make to James City County, Virginia. This report was commissioned by Hexagon Energy and produced by Mangum Economics.

The Project

Hedera Solar is a proposed 3-megawatt (MW) alternating current (AC) solar photovoltaic power generating facility. The project would be located off of Richmond Road and Ivy Hill Road in James City County, Virginia. The total acreage to be leased for the project encompasses approximately 100 acres of timberland. The actively used, fenced-in portion of the solar site would be approximately 40 acres.

Economic Impact

This section quantifies the economic and fiscal contribution that the proposed Hedera Solar project would make to James City County. The analysis separately evaluates the one-time pulse of economic activity that would occur during the construction phase of the project, as well as the annual economic activity that the project would generate during its ongoing operational phase.

Method

To empirically evaluate the likely local economic impact attributable to the proposed Hedera Solar project, the analysis employs a regional economic impact model called IMPLAN.[4] The IMPLAN model is one of the most commonly used economic impact simulation models in the U.S., and in Virginia is used by UVA's Weldon Cooper Center, the Virginia Department of Planning and Budget, the Virginia Employment Commission, and other state agencies and research institutes. Like all economic impact models, the IMPLAN model uses economic multipliers to quantify economic impact.

Economic multipliers measure the ripple effects that an expenditure generates as it makes its way through the economy. For example, as when the Hedera Solar project purchases goods and services – or when contractors hired by the facility use their salaries and wages to make household purchases – thereby generating income for someone else, which is in turn spent, thereby becoming income for yet someone else, and so on, and so on. Through this process, one dollar in expenditures generates multiple dollars of income. The mathematical relationship between the initial expenditure and the total income generated is the economic multiplier.

One of the primary advantages of the IMPLAN model is that it uses regional and national production and trade flow data to construct region-specific and industry-specific economic multipliers, which are then further adjusted to reflect anticipated actual spending patterns within the specific geographic study area

[4] IMPLAN is produced by IMPLAN Group, LLC.

that is being evaluated. As a result, the economic impact estimates produced by IMPLAN are not generic. They reflect as precisely as possible the economic realities of the specific industry, and the specific study area, being evaluated.

In the analysis that follows, these impact estimates are divided into three categories. First round direct impact measures the direct economic contribution of the entity being evaluated (e.g., own employment, wages paid, goods and services purchased by the Hedera Solar project). Second round indirect and induced impact measures the economic ripple effects of this direct impact in terms of business to business, and household (employee) to business, transactions. Total impact is simply the sum of the preceding two. These categories of impact are then further defined in terms of employment (the jobs that are created), labor income (the wages and benefits associated with those jobs), and economic output (the total amount of economic activity that is created in the economy).

Construction Phase

This portion of the section assesses the economic and fiscal impact that the one-time pulse of activity associated with construction of the proposed Hedera Solar project would have on James City County.

Economic Impact Assumptions

The analysis is based on the following assumptions:

- Total capital investment in the Hedera Solar project is estimated to be approximately $8.3 million.[5]
- Of that total:
    - Architecture, engineering, site preparation, and other construction and development costs are estimated to be approximately $5.8 million.[6]
    - Capital equipment costs are estimated to be approximately $2.4 million.[7] It is anticipated that no capital equipment would be purchased from vendors in James City County.[8]
- For ease of explication, all construction expenditures are assumed to take place during a representative 12-month period.

Economic Impact

Applying these assumptions in the IMPLAN model results in the following estimates of one-time economic and fiscal impact. As shown in Table 1, construction of the proposed Hedera Solar project

[5] Data Source: Hexagon Energy. Investment estimate is subject to change based on final design and vendor contracts.
[6] Data Source: Hexagon Energy.
[7] Data Source: Hexagon Energy.
[8] Data Source: IMPLAN Group, LLC.

would directly provide a one-time pulse supporting approximately: 1) 6 job years, 2) $372,700 in wages and benefits, and 3) $1.3 million in economic output to James City County.

Taking into account the economic ripple effects that direct investment would generate, the total estimated one-time impact on James City County would support approximately: 1) 8 job years, 2) $478,500 in wages and benefits, 3) $1.6 million in economic output, and 4) $42,800 in state and local tax revenue.

Table 1: Estimated One-Time Economic and Fiscal Impact on James City County from Construction of the Hedera Solar Project[9,10]

Economic Impact	Employment – Job Years	Wages and Benefits	Output
1st Round Direct Economic Activity	6	$372,700	$1,276,800
2nd Round Indirect and Induced Economic Activity	2	$105,800	$348,000
Total Economic Activity	**8**	**$478,500**	**$1,624,800**
Fiscal Impact			
State and Local Tax Revenue			**$42,800**

**Totals may not sum due to rounding.*

Ongoing Operations Phase

This portion of the section assesses the annual economic and fiscal impact that the proposed Hedera Solar project would have on James City County during its anticipated 35-year operational phase.

Economic Impact Assumptions

The analysis is based on the following assumptions:

- The Hedera Solar project would spend approximately $20,000 each year for maintenance and repair, vegetative control, and other operational expenditures.[11]

Economic Impact

Applying these assumptions in the IMPLAN model results in the following estimates of annual economic impact. As shown in Table 2, annual operation of the proposed Hedera Solar project would directly

[9] Please note that construction sector jobs are not necessarily new jobs, but the investments made can also support an existing job during the construction of the project. Additionally, it is important to note that it is not possible to know with certainty what proportion of jobs would go to construction contractors in the county or be filled by county residents.
[10] A job year is equal to one job over one year. It is used to denote employment on construction projects where the construction schedule is not exactly one year and to account for the fact that actual on-site employment may vary over the period.
[11] Data Source: Hexagon Energy. Expenditure estimate is subject to change based on final design and vendor contracts.

support approximately: 1) < 1 job, 2) $5,500 in wages and benefits, and 3) $15,900 in economic output to James City County.

Taking into account the economic ripple effects that direct impact would generate, the total estimated annually supported impact on James City County would be approximately: 1) < 1 job, 2) $7,000 in wages and benefits, and 3) $21,200 in economic output.

Table 2: Estimated Annual Economic Impact on James City County from the Ongoing Operation of the Hedera Solar Project

Economic Impact	Employment	Wages and Benefits	Output
1st Round Direct Economic Activity	< 1	$5,500	$15,900
2nd Round Indirect and Induced Economic Activity	< 1	$1,500	$5,300
Total Economic Activity	**< 1**	**$7,000**	**$21,200**

**Totals may not sum due to rounding.*

Fiscal Impact

This portion of the section quantifies the direct fiscal contribution that the proposed Hedera Solar project would make to James City County. The analysis considers two scenarios. Both scenarios include the additional revenue that Hedera Solar would generate for James City County over a 35-year period from the increased property assessments associated with reassessing the site as solar use property. Scenario 1 then describes the additional revenue Hedera Solar would generate for James City County from taxes levied on the capital investment, while Scenario 2 assumes tax revenue generated from the capital investment will be replaced with revenue associated with a locally adopted revenue share ordinance and based on the project's total generation capacity.

Fiscal Impact Assumptions

The analysis is based on the following assumptions:

- Hedera Solar would involve an investment of approximately $8.3 million in capital equipment and improvements to the existing property.[12]
- The proposed Hedera Solar project would be situated on approximately 40 fenced-in acres within an approximate 100-acre tract of leased land.[13]
- The fenced-in area would be reassessed at a solar use assessment value of $10,000 per acre.[14]

[12] Data Source: Hexagon Energy. Investment estimate is subject to change based on final design and vendor contracts.
[13] Data Source: Hexagon Energy.
[14] Data Source: Actual future assessment value for solar projects in James City County is currently unknown. The potential future assessment value of $10,000 per acre is an estimate based on experience with comparable solar projects in Virginia.

- The initial interconnection request for Hedera Solar was filed in January 2024.[15]
- Hedera Solar would be utility-owned.[16]
- Tax rates and locality ratios remain constant throughout the analysis.
- Hedera Solar's total generation capacity would be 3 MW AC.[17]
- Hedera Solar would become operational in the first quarter of 2026.[18]
- Hedera Solar would have an operational life of 35 years.[19]

Reassessment of Property

Table 3 details the increased tax revenue associated with removing the affected acreage from the land use program and reassessing the 40-acre fenced-in site as solar use property. The county real estate tax revenue from the project after reassessment is estimated to be approximately $3,300 per year. Adding the one-time rollback tax of approximately $16,500, the total cumulative revenue is estimated to be approximately $132,700 over the project's anticipated 35-year operational life. In contrast, the property currently generates approximately $200 per year in real estate tax revenue for the county, for a cumulative total of approximately $7,300 over 35 years.[20]

Table 3: Estimated County Revenue Generated by the Proposed Hedera Solar Project over 35 Years from Real Estate Taxes

Estimated Increased Appraised Value of Property under Solar Use	$400,000
James City County Real Estate Tax Rate (per $100)[21]	$0.83
Annual County Real Estate Tax – Solar Use	$3,300
Cumulative Revenue over 35 Years	**$116,200**
One-time Rollback Taxes[22]	$16,500
Total Cumulative Revenue over 35 Years	**$132,700**

**Totals may not sum due to rounding.*

[15] Data Source: Hexagon Energy.
[16] Data Source: Hexagon Energy.
[17] Data Source: Hexagon Energy.
[18] Data Source: Hexagon Energy.
[19] Data Source: Hexagon Energy.
[20] Derived from James City County's GIS database.
[21] Data Source: James City County FY2024 Adopted Budget.
[22] Rollback taxes are estimated based on the difference between the land use value assessment tax and the tax on the fair market value for the affected acreage for five complete tax years plus the current year, including simple interest. Does not account for changes in assessment values.

Scenario 1: Taxation of Capital Investment

Table 4 separately details the additional annual revenue that the proposed Hedera Solar project would generate for James City County over a 35-year period from taxes levied on capital investment. This estimate is calculated as: 1) the taxable portion of capital investments based on the stepdown local tax exemption pursuant to Virginia Code §58.1-2606.1, times 2) the State Corporation Commission's utility assessment ratio for taxation of public utilities in James City County, times 3) the State Corporation Commission's current depreciation guidelines for solar facilities, times 4) James City County's real property tax rate of $0.83 per $100 of assessed value pursuant to Virginia Code §58.1-2606.1.

As the data in Table 4 indicate, based on these calculations the estimated additional county revenue from taxation of capital investments associated with the proposed Hedera Solar project would be approximately $9,600 in the project's first year of operation, with that figure projected to increase to approximately $18,500 in year 11 of the project as the value of the exemption is reduced, and thereafter declining to approximately $2,100 in the project's 34th year of operation and thereafter as the value of the proposed capital investments is depreciated, for a cumulative total of approximately $404,400 over the anticipated 35-year operational life of the project.

Table 4: Estimated County Revenue by Proposed Solar Investment Over 35 Years

Year	Total Capital Investment Subject to Exemption[23]	Depreciated Value of Taxable Capital Investment[24]	Additional Annual County Tax Revenue Solar Investment[25]
1	$8,250,000	$1,159,800	$9,600
2	$8,250,000	$1,159,800	$9,600
3	$8,250,000	$1,159,800	$9,600
4	$8,250,000	$1,159,800	$9,600
5	$8,250,000	$1,159,800	$9,600
6	$8,250,000	$1,739,700	$14,400
7	$8,250,000	$1,739,700	$14,400
8	$8,250,000	$1,739,700	$14,400
9	$8,250,000	$1,733,700	$14,400
10	$8,250,000	$1,704,300	$14,100
11	$8,250,000	$2,230,900	$18,500
12	$8,250,000	$2,187,100	$18,200
13	$8,250,000	$2,140,700	$17,800
14	$8,250,000	$2,091,200	$17,400

[23] Data Source: Hexagon Energy.
[24] Virginia Code §58.1-2606.1 stipulates that solar facilities are subject to an exemption from local property taxes which is determined by the size of the project and the date of the interconnection request.
[25] Calculated pursuant to Virginia Code §58.1-2606.1 which stipulates that capital equipment owned by utilities is taxed as real property and the local tax rate on that capital equipment would be capped at James City County's real property tax rate of $0.83 per $100 of assessed value.

Year	Total Capital Investment Subject to Exemption[23]	Depreciated Value of Taxable Capital Investment[24]	Additional Annual County Tax Revenue Solar Investment[25]
15	$8,250,000	$2,038,900	$16,900
16	$8,250,000	$1,983,500	$16,500
17	$8,250,000	$1,924,700	$16,000
18	$8,250,000	$1,862,600	$15,500
19	$8,250,000	$1,796,400	$14,900
20	$8,250,000	$1,726,500	$14,300
21	$8,250,000	$1,652,300	$13,700
22	$8,250,000	$1,573,700	$13,100
23	$8,250,000	$1,490,500	$12,400
24	$8,250,000	$1,402,100	$11,600
25	$8,250,000	$1,308,500	$10,900
26	$8,250,000	$1,209,000	$10,000
27	$8,250,000	$1,103,900	$9,200
28	$8,250,000	$992,300	$8,200
29	$8,250,000	$874,200	$7,300
30	$8,250,000	$748,700	$6,200
31	$8,250,000	$616,000	$5,100
32	$8,250,000	$475,300	$3,900
33	$8,250,000	$326,000	$2,700
34	$8,250,000	$257,700	$2,100
35	$8,250,000	$257,700	$2,100
Cumulative Total			**$404,400**

**Totals may not sum due to rounding.*

Scenario 1: Total Fiscal Impact

Table 5 combines the results from the calculations depicted in Tables 3 and 4 to provide an estimate of the cumulative fiscal contribution that the proposed Hedera Solar project would make to James City County over its 35-year anticipated operational life under Scenario 1. As these data indicate, that cumulative total is approximately $537,100.

Table 5: Estimated Cumulative County Tax Revenue from the Proposed Hedera Solar Project over 35 Years under Scenario 1

County Real Estate Tax	$132,700
County Revenue from Taxation of Capital Investments	$404,400
Total Cumulative Revenue over 35 Years	**$537,100**

**Totals may not sum due to rounding.*

Scenario 2: Revenue Share Ordinance

The following section describes the additional annual revenue that the proposed Hedera Solar project would generate for James City County assuming the county adopts an energy revenue share ordinance under Virginia Code §58.1-2636. The Virginia Code currently stipulates that a locality may assess an annual revenue share of up to $1,400 per megawatt (MW) alternating current (AC) generation capacity of a solar facility. However, legislation that was passed in the 2021 General Assembly (SB 1201/HB 2006) and went into effect on July 1, 2021, allows a 10 percent escalator to be applied to the $1,400 per MW revenue share every five years, beginning in 2026. Section 58.1-3660 further stipulates that capital investment associated with the solar project will be exempt from taxation if the county adopts an energy revenue share ordinance.

Table 6 details the revenue generated from a revenue share ordinance including the 10 percent escalator. Based on a total generation capacity of 3 MW AC and an assumed commissioning date in 2026, a revenue share ordinance would generate approximately $219,200 over the anticipated 35-year operational life of the project.

Table 6: Estimated County Revenue Generated from a Revenue Share Ordinance over 35 Years

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
1	3	$1,540	$4,620
2	3	$1,540	$4,620
3	3	$1,540	$4,620
4	3	$1,540	$4,620
5	3	$1,540	$4,620
6	3	$1,694	$5,080
7	3	$1,694	$5,080
8	3	$1,694	$5,080
9	3	$1,694	$5,080
10	3	$1,694	$5,080
11	3	$1,863	$5,590
12	3	$1,863	$5,590
13	3	$1,863	$5,590
14	3	$1,863	$5,590
15	3	$1,863	$5,590
16	3	$2,050	$6,150
17	3	$2,050	$6,150
18	3	$2,050	$6,150
19	3	$2,050	$6,150
20	3	$2,050	$6,150
21	3	$2,255	$6,760
22	3	$2,255	$6,760
23	3	$2,255	$6,760

Year	MW	Revenue Share per MW with Escalator	Annual County Revenue
24	3	$2,255	$6,760
25	3	$2,480	$6,760
26	3	$2,480	$7,440
27	3	$2,480	$7,440
28	3	$2,480	$7,440
29	3	$2,480	$7,440
30	3	$2,728	$7,440
31	3	$2,728	$8,180
32	3	$2,728	$8,180
33	3	$2,728	$8,180
34	3	$2,728	$8,180
35	3	$2,480	$8,180
Cumulative Total			**$219,200**

**Totals may not sum due to rounding.*

Scenario 2: Total Fiscal Impact

Table 7 combines the results from the calculations depicted in Tables 3 and 6 to provide an estimate of the cumulative fiscal contribution that the proposed Hedera Solar project would make to James City County over its 35-year anticipated operational life under Scenario 2. As these data indicate, that cumulative total is approximately $351,800.

Table 7: Estimated Cumulative County Revenue from the Proposed Hedera Solar Project over 35 Years under Scenario 2

County Real Estate Tax	$132,700
County Revenue from Revenue Share Ordinance	$219,200
Total Cumulative Revenue over 35 Years	**$351,800**

**Totals may not sum due to rounding.*

Voluntary Payments

Voluntary payments are to be negotiated between Hedera Solar and James City County pursuant to Virginia Code §15.2-2288.8.

Voluntary payments can add significant value to the overall fiscal impact of solar projects to their host localities. The payments to be negotiated between Hedera Solar and James City County have yet to be finalized, therefore the study does include the voluntary payment details for Hedera Solar.

Current Use

This section provides a benchmark for the previous estimates of the economic contribution that the proposed Hedera Solar project would make to James City County by estimating the economic and fiscal contribution that the site makes to the county in its current use.

Economic Impact Assumptions

The analysis is based on the following assumptions:

- The proposed Hedera Solar project would be situated on approximately 40 acres of timberland.[26]

Economic Impact

Applying these assumptions in the IMPLAN model results in the following estimates of annual economic impact. As shown in Table 8, in its current use the proposed Hedera Solar project site directly supports approximately: 1) < 1 job, 2) $1,000 in wages and benefits, and 3) $1,500 in economic output to James City County.

Taking into account the economic ripple effects that direct impact generates, on average, the total annually supported impact on James City County is approximately: 1) < 1 job, 2) $1,300 in wages and benefits, and 3) $2,000 in economic output.

Table 8: Total Estimated Annual Economic Impact of the Hedera Solar Project Site on James City County – Current Use[27]

Economic Impact	Employment	Wages and Benefits	Output
1st Round Direct Economic Activity	< 1	$1,000	$1,500
2nd Round Indirect and Induced Economic Activity	< 1	$300	$500
Total Economic Activity	**< 1**	**$1,300**	**$2,000**

**Totals may not sum due to rounding.*

Fiscal Impact Assumptions

The analysis is based on the following assumptions:

- The current use assessment value of the affected acreage is approximately $25,100.[28]

[26] Data Source: Hexagon Energy.
[27] Calculations based data from the U.S. Department of Agriculture and IMPLAN Group, LLC for Virginia.
[28] Data Source: Derived from James City County's GIS database.

Fiscal Impact

Table 9 details the estimated tax revenue that the proposed Hedera Solar site generates for James City County in its current use. As the data in Table 9 indicate, the current county real estate tax revenue from the project site is estimated to be approximately $200 per year, for a cumulative total of approximately $7,300 over 35 years.

Table 9: Estimated County Revenue Generated by the Proposed Hedera Solar Project Site over 35 Years from Real Estate Taxes – Current Use

Estimated Assessed Value of Property – Current Use[29]	$25,100
James City County Current Real Estate Tax Rate (per $100)	$0.83
Estimated Annual County Real Estate Tax – Current Use	$200
Total Cumulative Revenue over 35 years	**$7,300**

**Totals may not sum due to rounding.*

The estimates provided in this report are based on the best information available and all reasonable care has been taken in assessing the quality of that information. However, because these estimates attempt to foresee the consequences of circumstances that have not yet occurred, it is not possible to be certain that they will be representative of actual events. These estimates are intended to provide a good indication of likely future outcomes and should not be construed to represent a precise measure of those outcomes.

[29] Data Source: Derived from James City County's GIS database.

Appendix M: Certification from County Treasurer

Enclosed.

Delinquent Notice

James City County
P. O. Box 8701
Williamsburg, Virginia 23187
Phone: (757) 253-6705

IVY HILL LLC & SILVERMAN, BARBARA L C/O
ELLEN LIGH
5 FARRINGDON CT
BALTIMORE MD 21209-2507

Account Number: 2306914

Outstanding balances provided are effective until 07/30/2024

PLEASE READ IMPORTANT INFORMATION ON THE REVERSE SIDE OF THIS FORM.

Tax Year	Bill Number	Installment	Due Date	Description	Tax	Penalty	Interest	Total
2023	236540	2	06/05/2024	101 IVY HILL ROAD	23.97	10.00	0.28	34.25

Total Taxes & License Fees	23.97
Penalty	10.00
Interest	0.28
Miscellaneous Fees	0.00
TOTAL AMOUNT DUE:	**$34.25**

Please make checks payable to James City County Treasurer and return the portion below with your payment. Drop boxes are located at the Treasurer's Office front door, at the Satellite Services Office, and in the Government Center parking lot. Payments submitted by drop box on the due date will be considered on time.

IVY HILL LLC & SILVERMAN, BARBARA L C/O
ELLEN LIGH
5 FARRINGDON CT
BALTIMORE MD 21209-2507

Account Number: 2306914

12906029

Total Amount Due as of 07/30/2024 **$34.25**

IMPORTANT INFORMATION

Payments for personal property tax must be received by the due date indicated on the original tax bill to avoid a late payment penalty. Envelopes with the United States Post Office postmark, *not a postal meter stamp*, dated on or before the due date are considered **to be on time.** A late payment penalty of ten percent (10%) is applied the DAY AFTER each due date, and interest of ten percent (10% APR) will accrue on late payments. ***Consult your bill paying service for the recommended number of days for payments to be postmarked on or before the due date.*** If a payment is made by check and is returned ANY REASON, the payment will be reversed, penalties and interest will be applied, and a fee of $50.00 will be charged to your account. The County pursues collection of delinquent Real Estate taxes by lien and all other legal means available.

It is the responsibility of the taxpayer to ensure the proper tax bill is received and paid on time.

If delinquent taxes exist, all monies received will be applied to the oldest bill first. The total amount of delinquent taxes shown on the front of this bill may not include collection fees.Once collection action begins, an administrative fee of $30.00 will be assessed on each delinquent account. Interest on the delinquent portion of this bill is calculated up to the due date. If payment is made before the due date, interest will be adjusted accordingly.

WAYS TO PAY

In Person:

Treasurer's Office	**Satellite Office**
CASH, CHECK OR CREDIT CARD	CASH, CHECK OR CREDIT CARD
101-B Mounts Bay Road	3127 Forge Road
Williamsburg VA 23185	Toano VA 23168
Phone (757) 253-6705	Phone (757) 564-2160

By Mail: Make check payable to James City County Treasurer and mail to PO Box 8701 Williamsburg VA 23187

By Credit Card: Online jamescitycountyva.gov/epay

By phone: 855-329-4498



NOTICE: Upon failure to pay taxes or fines by the due date, James City County will authorize the DMV to withhold all registration renewals for all vehicles owned or co-owned by the taxpayer, or the vehicle for which the ticket was received until taxes are made current. Fees associated with the DMV Stop process will be assessed to all owners of vehicles with delinquent taxes owed. To have the stop released, all accounts must be paid current. Payments by check will NOT be accepted to release DMV stops. VA Code 46.2-752(J)

Change of Address:

County of James City
P.O Box 8701
Williamsburg, VA 23187

Treasurer 8:54 AM

RE: [External]Statement of Paid Real Estate Taxes

To: Ester Rekhelman

Good morning,
Attached you will find the delinquent notice for account 2306914 (1110100013). This is penalty for late payment.
Payment was received 06/26/2024 for the June 5, 2024 tax bill due date.
Account 2306915 has a zero balance. Payment was received on 04/15/2024 for the June 5, 2024 tax bill due date.
If you have additional questions, please contact the Treasurer's Office at 757-253-6705.
Thank you,

Samantha S.
Accounting Technician II
101 B Mounts Bay Rd.
Williamsburg, Virginia 23185
Phone 757-253-6705
Fax 757-253-6844
www.jamescitycountyva.gov

APPENDIX N: PHASE I ENVIRONMENTAL SITE ASSESSMENT

Enclosed.

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Hedera Solar
±77 acres
101 and 121 Ivy Hill Road
James City County, Virginia

June 20, 2024

Prepared For:
Hexagon Development, LLC
321 East Main St, Suite 500
Charlottesville, VA 22902

Prepared By:

Kimley»Horn

© June 2024
Project No. 113526017

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Hedera Solar
±77 acres
James City County, Virginia

Prepared By:
Kimley-Horn and Associates, Inc.
2035 Maywill Street, Suite 200
Richmond, VA 23230
Kimley-Horn #113526017

June 20, 2024



Prepared By: Trevor Celata
Environmental Analyst



Reviewed By: Katie Crum
Vice President

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1. Summary

Kimley-Horn and Associates, Inc. (Kimley-Horn) was retained by Hexagon Development, LLC (Client) to conduct a Phase I Environmental Site Assessment (ESA) on two parcels addressed 101 and 121 Ivy Hill Road, comprising ±77 acres located on the south side of Richmond Road, west of Barhamsville Road in James City County, Virginia. The parcels are identified by James City County Parcel IDs (PIN) 1110100013 (101 & 120 Ivy Hill Road) and 1110100024 (121 Ivy Hill Road. PIN 1110100013 is split into two distinct areas by Ivy Hill Road. For the purposes of this report, only the westernmost portion of the parcel (101 Ivy Hill Road) will be reviewed. The area encompassed by these two parcels will be referred to herein as the "Subject Property." The location of the Subject Property is depicted in **Figure 1**. Representative site photographs are contained in **Appendix A**.

The Subject Property is in use for forestry and is bound by Richmond Road to the north. Ivy Hill Road extends to the south from Richmond Road and splits the parcel identified by PIN 1110100013 (101 Ivy Hill Road is located on the west side and 120 Ivy Hill Road is located on the east side). In addition, Hill Lane, consisting of a gravel road and 15-foot-wide ingress/egress easement, is located within the central portion of the Subject Property. The surrounding area is rural and consists of predominantly rural property with residential, agricultural, commercial/industrial, and forestry uses and undeveloped, wooded areas.

This Phase I ESA was performed in general accordance with the methodologies and practices outlined in the American Society for Testing and Materials (ASTM) "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property" (ASTM E2247-16). The purpose of this Phase I ESA was to identify Recognized Environmental Conditions (RECs) as defined in ASTM E2247-16.

This report represents our services as of the report date and constitutes our final document; its text may not be altered after final issuance. Findings in this report are based on the Subject Property's current utilization, observations derived from the most recent site reconnaissance, information and records limited to reasonably ascertainable, and from other activities described herein; such information is subject to change. Certain indicators of the presence of hazardous substances or petroleum products may have been latent, inaccessible, unobservable, or not present during the most recent reconnaissance and may subsequently become observable. Further, the findings in this report are not to be construed as legal interpretation or advice.

Specific details were not included or fully developed in this section and this report must be reviewed in its entirety for a comprehensive understanding of the results.

1.1. Recognized Environmental Conditions

An REC, as defined in Section 3.2.80 of ASTM E2247-16, is the presence or likely presence of any hazardous substances or petroleum products in, on, or at the subject property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

It is the opinion of the Environmental Professional (EP) that no RECs exist on the Subject Property.

1.2. Controlled Recognized Environmental Conditions

A Controlled Recognized Environmental Condition (CREC), as defined in Section 3.2.19 of ASTM E2247-16, is a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

It is the opinion of the EP that no CRECs exist on the Subject Property.

1.3. Historic Recognized Environmental Conditions

A Historical Recognized Environmental Conditions (HRECs), as defined in Section 3.2.43 of ASTM E2247-16, is a previous release of any hazardous substances or petroleum product that has occurred in connection with the subject property and has been addressed to the satisfaction of the applicable regulatory authority or meets unrestricted residential use criteria established by a regulatory authority, without subjecting the property to any required controls.

It is the opinion of the EP that no HRECs exist on the Subject Property.

1.4. *De Minimis* Conditions

A *de minimis* condition, as defined in Section 3.2.23 of ASTM E2247-16, is a release that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

This Phase I ESA revealed evidence of *de minimis* conditions in association with the Subject Property consisting of the following:

- An abandoned concrete structure was observed with an unknown conduit located at the base of the structure. Dense vegetation and condition of the structures limited a detailed review of the exterior and interior of the structures. The following may be associated with onsite structures:
  - Polychlorinated Biphenyls (PCB) containing items such as window caulk and paints may be associated with the onsite structures.
  - Observations for lead-based paint (LBP) or asbestos-containing material (ACM) were not conducted and may be associated with structures located within the subject property.
  - Given the rural setting and age of structures, wells, septic systems, aboveground storage tanks (ASTs) and/or underground storage tanks (USTs) may be associated with structures located within the Subject Property. The owner is not aware of the existence of any tanks and/or wells and none were observed by Kimley-Horn. However, should tanks and/or wells be found, they should be properly abandoned in accordance with local, state, and federal regulations.
- Dumping and discarded items, including but not limited to, metal debris, lumber, and tires were observed on the Subject Property.

2. Introduction

2.1. Purpose and Scope of Services

This Phase I ESA was performed in general accordance with the methodologies and practices outlined in ASTM E2247-16. The purpose of this Phase I ESA was to evaluate the current and historical conditions of the subject property in an effort to identify RECs. This Phase I ESA is intended to reduce, but not eliminate, uncertainty regarding the potential for RECs. Additionally, this Phase I ESA was designed to assist the Client in developing information to identify RECs in connection with the subject property as reflected by the scope of this report. This purpose was undertaken through user-provided information, a regulatory database review, historical and physical records review, interviews, and a visual, noninvasive reconnaissance of the Subject Property and adjoining properties limited to public thoroughfares. Limitations, ASTM deviations, and significant data gaps (if identified) are noted in the applicable sections of the report.

2.2. Significant Assumptions

Kimley-Horn makes the following assumptions in association with this report:

- All information provided by all sources and parties, including the User, is accurate and complete.
- All information provided by Environmental Data Resources, Inc (EDR) regarding the regulatory status of facilities located within the minimum search radius and information obtained from the state and locality files were complete, accurate, and current.
- All information obtained through interviews was complete, accurate, and unbiased.
- All USTs within the immediate vicinity of the Subject Property were reported by the property owner during the interview.

2.3. Limitations and Exceptions

This Phase I ESA represents a reasonable attempt to identify RECs for the subject property through the implementation of the methodology and the use of resources described above. There is always the possibility that RECs have escaped detection due to the limitations of this study, the incompleteness or inaccuracy of governmental records, or the presence of undetected and unreported environmental accidents. The following limitations in data and resources were encountered during the preparation of this report.

- Portions of aerial photography reviewed were of insufficient quality to ascertain full detail.
- Dense vegetation and mounds of dumping limited visibility and access.
- A 50-year chain of title was not provided by the Client.
- The interior of the onsite structure was not accessed.
- Interviews with adjacent property owners were not reasonably ascertainable, and as such not reviewed as part of this report.

Conclusions were based on practically reviewable information available within reasonable time and cost constraints. Based upon the agreed-on scope of services, this Phase I ESA did not include subsurface or other invasive assessments, vapor intrusion assessments or indoor air quality assessments (i.e., evaluation of the presence of vapors within a building structure), or other services not particularly identified and discussed herein. Credentials of the company (Statement of Qualifications) have not been included in this report but are available upon request.

Reasonable attempts were made to obtain information within the scope and time constraints set forth by the client; however, in some instances, information requested is not, or was not, received by the issuance date of the report. Information obtained for this Phase I ESA was received from several sources that we believe to be reliable; nonetheless, the authenticity or reliability of these sources cannot and is not warranted hereunder. There is always the possibility that RECs have escaped detection due to the limitations of this Phase I ESA, the incompleteness or inaccuracy of governmental records, or the presence of undetected and unreported environmental accidents.

2.4. Special Terms and Conditions

The terms and conditions of the completion of the Phase I ESA are those defined in the contract with the Client for preparation of this report.

2.5. User Reliance

This Phase I ESA report is provided for the sole use of Kimley-Horn and the Client. Unless provided with a Right of Reliance letter, use of this report by any third party will be at the party's sole risk, and Kimley-Horn disclaims any liability for any such uses or reliance by third parties. Reliance on the Phase I ESA by the Client and all authorized parties will be subject to the terms, conditions and limitations stated in the contract with Kimley-Horn and Associates, Inc. and this Phase I ESA report. Continued viability of this report is subject to ASTM E2247-16.

3. Subject Property Description

3.1. Location and Legal Description

The Subject Property consist of 101 and 121 Ivy Hill Road, comprising ±77 acres located on the south side of Richmond Road, west of Barhamsville Road in James City County, Virginia. The parcels are identified by James City County PINs 1110100013 and 1110100024. The online James City County Property Information System provides legal descriptions for the Subject Property as "PT COSBY" for parcel 1110100013 and "1 18 AC W LINE OF 3" for parcel 1110100024.

3.2. Subject Property and Vicinity General Characteristics

The Subject Property is primarily in use for forestry. The surrounding area consists of predominantly rural property with residential, agricultural, commercial/light industrial, and forestry uses and undeveloped, wooded areas. The Subject Property is zoned "Agricultural District" (A1).

3.2.1. Subject Property Elevation and Topography

The U.S. Geologic Survey (USGS) Toano, Virginia 7.5-Minute Quadrangle Topographic Map, photo revised 1990, depicts the Subject Property as having varying in elevations between 40-100 feet (National Geodetic Vertical Datum of 1929, NGVD29). Edwards Creek is mapped along the western boundary of the Subject Property. An unnamed tributary of Mill Creek is also mapped along the southeastern corner of the Subject Property. Apparent surface water drainage is to the west and southeast.

Based on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Map Number 51095C0038D, effective December 16, 2015, and 51095C0039D, effective December 16, 2015, the Subject Property is located within unshaded Zone X, which is defined as "areas determined to be outside the 0.2% annual chance flood."

3.3. Subject Property Current Uses

The Subject Property is in use for forestry.

3.4. Subject Property Structures, Roads, and Other Improvements

The Subject Property is located on the southside of Richmond Road and access to the Subject Property is gained from Ivy Hill Road and Hill Lane. Ivy Hill Road, consisting of a paved road located within public right-of-way, extends south from Richmond Road. Hill Lane is a gravel road extending from Ivy Hill Road to the west within the Subject Property. Hill Lane is located within an easement within the Subject Property. Driveways and other unimproved access paths are located off Hill Lane. Overhead powerlines are located along the northern and eastern boundaries adjacent to Richmond Road and Ivy Hill Road. An abandoned cinderblock structure is located northwest of the intersection of Ivy Hill Road and Hill Lane. Otherwise, the Subject Property is primarily forested with vegetation of varying ages.

3.5. Current Use of Adjoining Properties

The adjoining properties consists of predominantly residential, agricultural, commercial/ light industrial, and forestry uses and undeveloped areas. Specifically, the Subject Property is bound by Richmond Road and property in use for residential and commercial/light industrial purposes

to the north. The northern adjacent properties in use for commercial/light industrial purposes consist of the following:

- 8952 Richmond Road – facility is located on the north side of Richmond Road and in use by James City Company Recycling
- 8888 Richmond Road – facility is located on the north side of Richmond Road and in use by Williamsburg Heating and Air Conditions
- 8877 Richmond Road – facility is located on the south side of Richmond Road, directly abutting the Subject Property and in use by Virginia Lawn and Landscape

The adjacent properties to the east and south consist primarily of residential properties and undeveloped, wooded land. The adjacent property to the west consists of a church. The general area appears to be served by private wells and septic systems.

4. User Provided Information

4.1. User Questionnaire

Ms. Ester Rekhelman of Hexagon Development, LLC completed the User Questionnaire on June 03, 2024. A copy of the completed User Questionnaire can be found in **Appendix C.**

4.2. Title Records

A 50-year chain-of-title was not provided to Kimley-Horn; therefore, Kimley-Horn did not review a 50-year chain-of-title during this Phase I ESA. Unless notified otherwise, we assume that the User is evaluating this information outside the scope of this report. As such, this is considered a limiting condition; however, based on the other data reviewed for the Subject Property, it is not considered a significant data gap.

4.3. Environmental Liens or Activity and Use Limitations

Ms. Rekhelman is not aware of any activity use limitations (AULs) or environmental liens associated with the Subject Property. An Environmental Lien and AUL Search Report for the Subject Property was processed by EDR as part of this Phase I ESA and is provided in **Appendix B**. No environmental liens or AULs were identified.

4.4. Specialized Knowledge

Ms. Rekhelman stated that the Subject Property has been owned by the current landowner and their family for 40 years and has been a wooded area for the entire time.

4.5. Valuation Reduction for Environmental Issues

Mrs. Rekhelman indicated that the Subject Property is to be leased and the price reasonably reflects the fair market value of the Subject Property.

4.6. Owner, Property Manager, and Occupant Information

The Subject Property is currently owned by Ivy Hill LLC, and Barbara L. Silverman.

4.7. Reason for Performing the Environmental Site Assessment

The Phase I ESA is being performed to satisfy environmental inquiry into the past use of the Subject Property. Furthermore, the Phase I ESA was performed to qualify for one of the

Landowner Liability Protections (LLP) offered by the Small Business Liability Relief and Brownfield's Revitalization Act of 2001 (the "Brownfields Amendments").

4.8. Other Environmental Reports Reviewed

No other environmental reports were reviewed for the purposes of this report.

5. Record Review

5.1. Standard Environmental Record Sources

Kimley-Horn reviewed various sources of information to obtain data pertaining to the release of regulated substances or petroleum products on or near the Subject Property. An environmental database search for the Subject Property and the surrounding area was performed by EDR using ASTM E2247-16 standard radii. A copy of the EDR Radius Report is attached in **Appendix B**. Below is a description of pertinent sites identified in the database review.

Subject Property

The Subject Property was not identified on any state or federal databases reviewed.

Surrounding Sites

9086 Richmond Road, NW/Upgradient
This site was identified by EDR as Eveland Raymond and Marion Residence on the LTANKS Database. The site is located ±0.5 miles northwest of the Subject Property. The database lists a Pollution Complaint (PC) Number 2020-5167 associated with the site which was opened on March 12, 2020. The site was reportedly associated with a release of ±200 gallons of hearing oil from piping associated with the heating oil tank. The site was investigated and remediated. The Virginia Department of Environmental Quality (VDEQ) determined that contamination levels at the site do not warrant further corrective action and closed the PC case in a letter dated August 14, 2020. Due to distance and closed status of the PC case, this site is not considered a REC for the Subject Property.

Orphan Sites
No orphan sites, so named because of incomplete or incorrect address information, were identified by EDR.

5.2. Physical Setting Sources

Subject Property elevations and topography were reviewed using the USGS Toano, VA 7.5 Minute map shown in **Appendix B** and discussed in **Section 3.2.1.** Information on local topography was obtained from the Physical Setting Summary of the EDR report in **Appendix B**.

5.3. Historical Use Information on the Property

The following is a summary of the historic uses of the Subject Property.

5.3.1. Aerial Photograph Review

In order to ascertain the previous land uses of the Subject Property, a review of historical aerial photographs for physical conditions of the Subject Property was conducted. The 1963, 1973, 1982, 1994, 2000, 2006, 2011, 2014, and 2018 aerial photographs were reviewed.

- **1963 –** The photo depicts the Subject Property as primarily forested with multiple unimproved roads through the Subject Property. The Subject Property parcel identified by PIN 1110100024 appears to be cleared with a structure located at the center of the parcel. The two largest roads within the Subject Property appear to be Ivy Hill Road and Hill Lane.

Richmond Road is depicted to the north of the Subject Property. Undeveloped, wooded land and residential dwellings are depicted within the general vicinity of the Subject Property.

- **1973 –** The photo depicts the Subject Property with generally similar characteristics as observed within the 1963 photo. Many of the smaller access roads that were observed in the 1963 aerial photo are no longer visible. The previously cleared area around the observed radio tower has been reforested. The adjoining properties appear similar to the 1963 aerial photograph.
- **1982 –** The photo depicts the Subject Property with generally similar characteristics as observed within the 1973 photo. Additional development is depicted on adjoining properties.
- **1997 –** The photo depicts the Subject Property with generally similar characteristics as observed within the 1982 photo. An additional structure is evident on the adjoining property to the west.
- **2000 –** Photo quality is insufficient to obtain details of the Subject Property and general vicinity.
- **2006 –** The photo depicts the center of the Subject Property as recently cleared in the vicinity of Hill Lane. Multiple new structures appear to be located northeast of the Subject Property.
- **2011 –** The photo depicts the Subject Property with generally similar characteristics as observed within the 2006 photo.
- **2014 –** A small area appears to have been cleared along the southwestern boundary at the end of Hill Lane.
- **2018 –** The photo depicts the Subject Property with generally similar characteristics as observed within the 2014 photo.

5.3.2. Chain of Title Review

A 50-year chain of title and title commitments were not provided to Kimley-Horn.

5.3.3. City Directory Review

A City Directory summary of properties along Richmond Road and Ivy Hill Road was provided by EDR and is attached in its entirety in **Appendix B.**

Addresses were provided for multiple years spanning from 1992 to 2020. The majority of addresses identified appear to be residential. Multiple churches and small retail stores and other commercial entities such as landscaping services were identified along Richmond Road. None of the identified entities are considered RECs for the Subject Property.

5.3.4. Building Permit Report

A summary of building department records for the Subject Property was requested by EDR. No permits were identified for the Subject Property or adjoining properties. A copy of the report is provided in **Appendix B**.

5.3.5. Sanborn Maps

EDR conducted a search of available Sanborn Fire Insurance Maps and determined that there was no coverage for the Subject Property. A copy of the Sanborn Map report documenting no coverage is provided in **Appendix B**.

5.3.6. Historical Topographic Maps

Historical topographic maps obtained from EDR for the Subject Property are included in Appendix B. The 1917, 1918, 1952, 1953, 1958, 1965, 1972, 1979, 1986, 2013, 2016, 2019, and 2022 topographic maps were reviewed.

- **1917 –** The map depicts the Subject Property as located north of the Chesapeake and Ohio Railroad. Edwards Swamp is depicted within the western portion of the Subject Property and an unnamed tributary in the southeastern portion. Many structures are depicted south of the Subject Property. An unimproved road is observed running through the center of the property, similar to Hill Lane in present day.
- **1918 –** Characteristics observed are generally similar to those depicted within the 1917 map.
- **1952 –** The map depicts Ivy Hill Road and Richmond Road. The Subject Property is depicted as undeveloped. Additional structures are visible within the greater vicinity and a transmission line is evident to the south of the Subject Property.
- **1953 and 1958 –** Characteristics observed are generally similar to those depicted within the 1952 map.
- **1965 –** A radio tower is depicted within the northeastern portion of the Subject Property at the intersection of Hill Lane and Ivy Hill Road. Additional new structures are depicted to the east of the Subject Property.
- **1972 through 1986 –** Characteristics observed are generally similar to those depicted within the 1965 map.

Maps reviewed between 2013 and 2022 do not depict structures.

5.3.7. Other Environmental Records

No other environmental records were reviewed for the purposes of this report.

5.3.8. Past Use of Subject Property

The Subject Property appears to have historically been used for forestry activity and a radio tower.

5.3.9. Past General Surrounding Land Uses

Past general surrounding land use appears to primarily consist of agricultural, forestry, residential and commercial/light industrial uses.

6. Limited Site Reconnaissance

6.1. Methodology and Limiting Conditions

Information contained in this section is based on a visual reconnaissance conducted while walking the subject property. On June 07, 2024, Trevor Celata, Environmental Scientist with Kimley-Horn, conducted a visual reconnaissance of the Subject Property. Site reconnaissance activities consisted of a visual inspection of exterior portions of the Subject Property to identify RECs. Historical topographic maps and aerial photographs were utilized to determine locations of potential structures and these areas were focused on during the limited site reconnaissance. The Subject Property limits is based on GIS data from James City County and may vary from the actual property limits upon survey. A handheld GPS unit was utilized to navigate and locate observed features during the site reconnaissance. Observations of the Subject Property were limited due to the following:

- Kimley-Horn did not observe the entirety of the Subject Property for evidence of RECs due to dense vegetation which limited the ability to see pertinent site features.
- The onsite structure was not entered due to vegetation, condition of the structure, and safety considerations. The onsite structure was surrounded by vegetation and leaf litter and limited the view of potential vent pipes.
- Not all contents of dumping were observable due to mounds of dumping surrounded by vegetation, debris, and soil limiting views and presenting safety considerations.
- Kimley-Horn did not observe the entirety of the Subject Property for evidence of RECs due to rural setting, time and safety considerations, and other physical and/or natural obstacles. The limited site reconnaissance was completed within reasonable time and cost constraints.

Pertinent features are shown on **Figure 3** and photographs collected during the site reconnaissance are provided in the Photograph Log in **Appendix A**.

6.2. General Site Setting

General site settings are described in **Section 3**.

6.3. Site Observations

The Subject Property was accessed via Ivy Hill Road and Hill Lane. Kimley-Horn observed the following:

- Overhead powerlines are located adjacent to Richmond Road (Photo 1) and along the west side of Ivy Hill Road (Photo 2). *De minimis* dumping and debris consisting of but not limited to tires, household trash, and former power poles are located within the overhead powerline easements (Photos 1 & 3). Billboard advertisements were observed along Richmond Road (Photos 8 & 9). A pole-mounted transformer with a blue non-PCB sticker (Photo 7) and two pad mounted transformer/utility housing boxes were observed near the intersection of Richmond Road and Ivy Hill Road (Photo 6). Stressed vegetation or stained soil was not observed in the vicinity of the transformers and utility housing boxes.
- An abandoned concrete structure (Photos 10-12) is located northwest of the intersection of Ivy Hill Road and Hill Lane (labeled Abandoned Structure #1 on Figure 3). The structure is located in the general area of the radio tower depicted on historical topographic maps of the Subject Property. The interior of the structure appears to contain debris associated with the

deteriorating roof of the structure. The structure also appeared to have once been serviced with electric utilities. An unidentified conduit was observed protruding through the ground surface at the base of the structure (Photo 11). No soil staining or stressed vegetation was readily observable immediately adjacent to the structure. Vent pipes, fill ports and/or above ground storage tanks were not readily apparent.

- An isolated area of *de minimis* dumping is located at the intersection of Ivy Hill Road and Hill Lane. The dumping appears to have contained tires (Photo 13).
- Hill Lane is a gravel road extending from Ivy Hill Road to the west with an unnamed gravel driveway extending southwest to adjacent properties (Photos 14 -16).
- Portions of the Subject Property consist of younger forest vegetation that suggests logging/timbering in recent years which is consistent with the aerial photography (Photos 17 -19). Edwards Swamp is located along the western limits of the Subject Property (Photos 19-21).
- A box culvert is located in the northwest limits of the Subject Property and appears to extend under Richmond Road. An isolated area of *de minimis* dumping is located immediately southeast of the box culvert (Photos 20 & 21)

The approximate locations of observed features are shown on **Figure 3**. Representative pertinent site photographs are provided as **Appendix A**.

7. Interviews

The following is a summary of the interviews conducted by Trevor Celata, Environmental Scientist with Kimley-Horn.

7.1. Interview with Property Owner / Current Property Manager

Ellen & Noah Lightman, owners of the Subject Property, were interviewed via telephone on June 24, 2024. Ms. Lightman stated that she was known the property for approximately 70 years and has only been forest land. Ms. Lightman is not aware of any storage tanks or contaminated soils on the property. She also stated that she does not have any knowledge of any industrial activities on the property or any adjoining properties. Ms. Lightman stated that she did not have knowledge of any dumping on the property and that she does not have any relationship with the adjoining landscape business to the northeast. Ms. Lightman also stated that she does not have any knowledge of the concrete structure that was observed northwest of the intersection of Ivy Hill Road and Hill Lane.

A copy of the full interview form completed with Ms. Lightman is provided in **Appendix D**.

7.2. Interviews with Government Officials

On May 24, 2024, the VDEQ was contacted for information pertaining to documented environmental concerns for the Subject Property. The VDEQ responded on May 30, 2024 stating that no records pertaining to the Subject Property were found. The VDEQ provided additional information on 9086 Richmond Road described in **Section 5.1** above. Correspondence is included in **Appendix D.**

A Freedom of Information Act (FOIA) request was submitted to James City County via online request form on May 24, 2024 for any information pertaining to potential fuel/heating oil tanks, wells, or septic systems. James City County responded on May 28, 2024 with building permit records that appear to relate to the multiple billboards along Richmond Road on the northern boundary of the Subject Property. The billboards appear to be installed within existing Virginia Department of Transportation (VDOT) right-of-way.

A FOIA request was submitted to the Virginia Department of Public Health (VDH) on May 24, 2024. VDH responded on May 14, 2024 with multiple records that did not directly apply to the Subject Property.

8. Vapor Evaluation

Kimley-Horn performed a Tier I Vapor Encroachment Screening for the Subject Property in accordance with E2600-15 *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions (2015).* The object of this screening is to identify vapor encroachment conditions (VECs). ASTM Standard Guide E2600-15 defines a VEC as "the presence or likely presence of constituent- of-concern vapors in the vadose zone of the Target Property caused by the release of vapors from contaminated soil and/or groundwater either on or near the Target Property as identified by the Tier 1 or Tier 2 procedures in this guide."

Information regarding nearby facilities with the potential to be vapor sources, local soil types, and topographic information was obtained through EDR. This information was used to assess the potential for VECs at the Subject Property. According to the reasonably ascertainable information reviewed during this screening process, Kimley-Horn has determined that a VEC is not likely to exist at this time.

The Tier I VES does not include vapor intrusion and/or indoor air quality considerations associated with existing and/or proposed structures. No vapor sampling was conducted in association with this VES and the Subject Property.

9. Significant Data Gaps

In addition to the limitations identified in **Section 2.4**, the following data gaps were identified:

- A 50-year chain of title was not received and as such was not reviewed as part of this report.
- Interviews with adjacent property owners were not completed due to lack of response, and as such were not reviewed as part of this report.
- Interviews with previous property owners were not reasonably ascertainable, and as such were not reviewed as part of this report.

As discussed in **Section 2.4**, limitations were identified during the completion of this Phase I ESA. However, these limitations are not considered to be significant data gaps based on the review of other sources of reasonably ascertainable information associated with the Subject Property.

Conclusions were based on practically reviewable information available within reasonable time and cost constraints. There is always the possibility that potential sources of contamination have escaped detection due to the limitations of this study, the inaccuracy of governmental records, or the presence of undetected and unreported environmental accidents.

10. Findings

The following is a summary of findings identified during completion of this Phase I ESA and required in ASTM E2247-16.

10.1. Recognized Environmental Conditions

An REC, as defined in Section 3.2.80 of ASTM E2247-16, is the presence or likely presence of any hazardous substances or petroleum products in, on, or at the subject property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

It is the opinion of the EP that no RECs exist on the Subject Property.

10.1. Controlled Recognized Environmental Conditions

A CREC, as defined in Section 3.2.19 of ASTM E2247-16, is a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

It is the opinion of the EP that no CRECs exist on the Subject Property.

10.2. Historic Recognized Environmental Conditions

A HRECs, as defined in Section 3.2.43 of ASTM E2247-16, is a previous release of any hazardous substances or petroleum product that has occurred in connection with the subject property and has been addressed to the satisfaction of the applicable regulatory authority or meets unrestricted residential use criteria established by a regulatory authority, without subjecting the property to any required controls.

It is the opinion of the EP that no HRECs exist on the Subject Property.

10.3. *De Minimis* Conditions

A *de minimis* condition, as defined in Section 3.2.23 of ASTM E2247-16, is a release that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies.

This Phase I ESA revealed evidence of *de minimis* conditions in association with the Subject Property consisting of the following:

- An abandoned concrete structure was observed to the northwest of the intersection of Ivy Hill Road and Hill Lane. An unknown conduit and pipe are associated with the structure. Vegetation and deteriorated condition of the structures limited a detailed review of the exterior and interior of the structures. The following may be associated with onsite structures:
  - Polychlorinated Biphenyls (PCB) containing items such as window caulk and paints may be associated with the onsite structures.

  - Observations for lead-based paint (LBP) or asbestos-containing material (ACM) were not conducted and may be associated with structures located within the Subject Property.
  - Given the rural setting and age of structures, wells, septic systems, aboveground storage tanks (ASTs) and/or underground storage tanks (USTs) may be associated with structures located within the Subject Property. The owner is not aware of the existence of any tanks and/or wells and none were observed by Kimley-Horn. However, should tanks and/or wells be found, they should be properly abandoned in accordance with local, state, and federal regulations.
- Dumping and discarded items, including but not limited to, metal debris, lumber, and tires were observed on the Subject Property.

11. Deviations

As defined in ASTM Standard Method E2247-16, no deviations were part of this Phase I ESA.

12. References

American Society for Testing and Materials, (2016). Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property, E2247-16.

American Society for Testing and Materials, Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions, E 2600-15.

Environmental Data Resources, Inc., May 2024. Environmental Reports

Federal Emergency Management Agency Flood Insurance Rate Maps. Map Numbers 51095C0038D, effective December 16, 2015.

Federal Emergency Management Agency Flood Insurance Rate Maps. Map Numbers 51095C0039D, effective December 16, 2015.

Toano, VA 2022 7.5 Minute Quadrangle Topographic Map, 1:24,000.

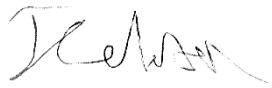
13. Qualifications of Environmental Professionals

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. We have developed and performed or directed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

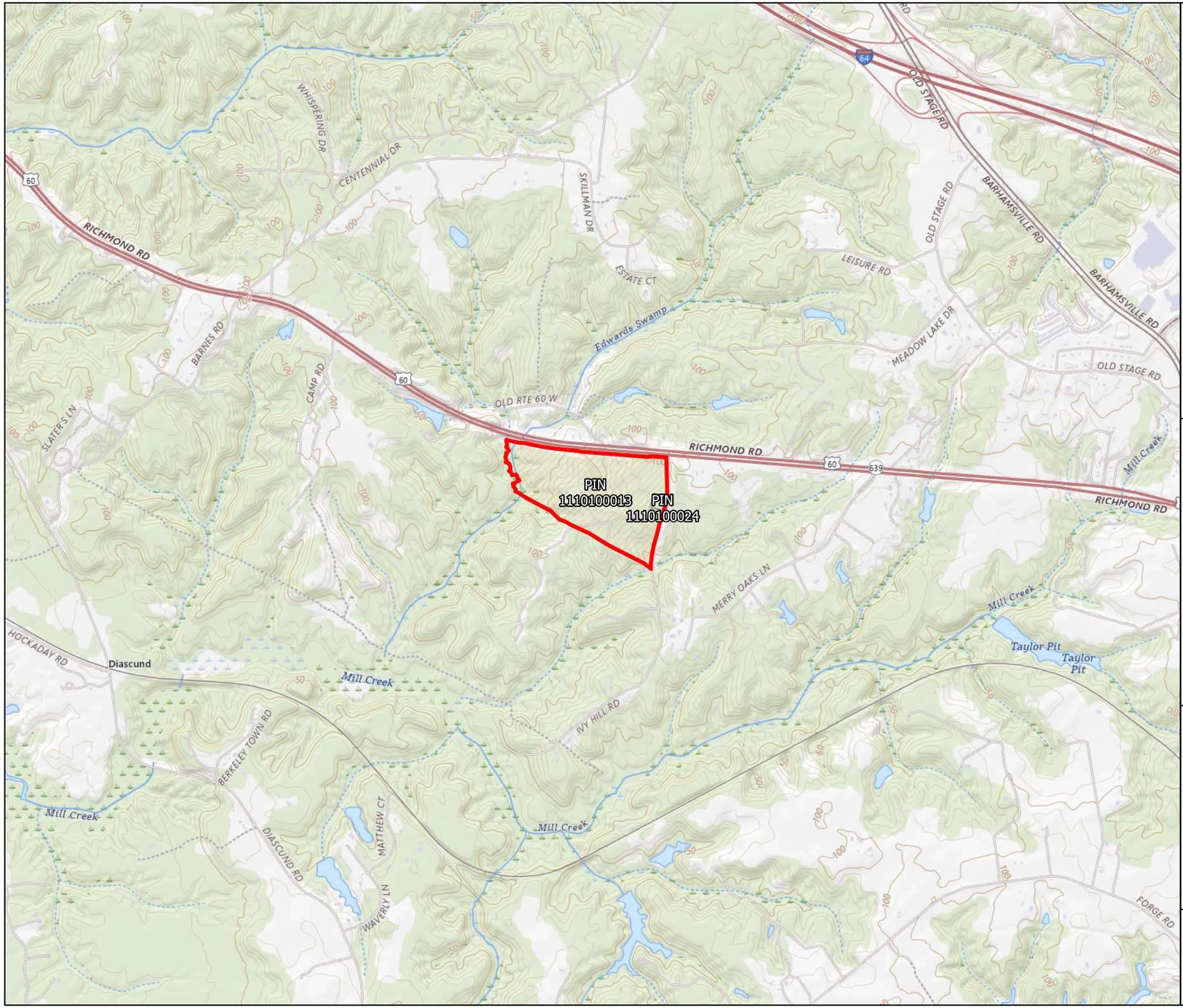
Please refer to the qualifications of personnel participating in this assessment attached in **Appendix E**.

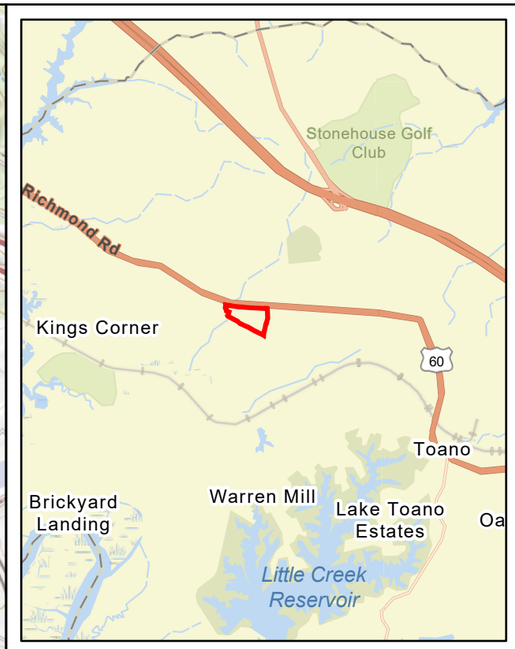


Katie Crum, CPWD



Trevor Celata





SUBJECT PROPERTY

NOTES:
1. USGS 7.5 MINUTE SERIES TOPOGRAPHIC MAP (TOANO, VA)

0 2,000 4,000 FT

1 IN =2,000 FT

HEDERA SOLAR
JAMES CITY COUNTY, VA

TOPOGRAPHIC VICINITY

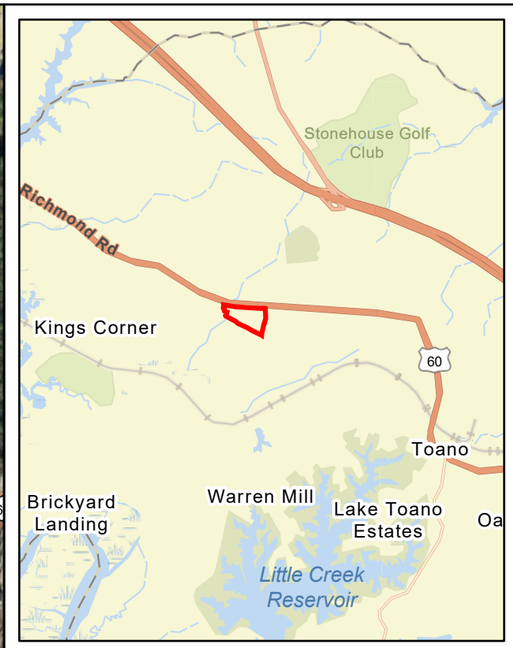
Kimley»Horn

N

DATE:
06-07-2024

FIGURE:
1





SUBJECT PROPERTY

NOTES:
1. 2021 VBMP AERIAL IMAGERY

0 500 1,000 FT

1 IN =500 FT

HEDERA SOLAR
JAMES CITY COUNTY, VA

AERIAL IMAGERY

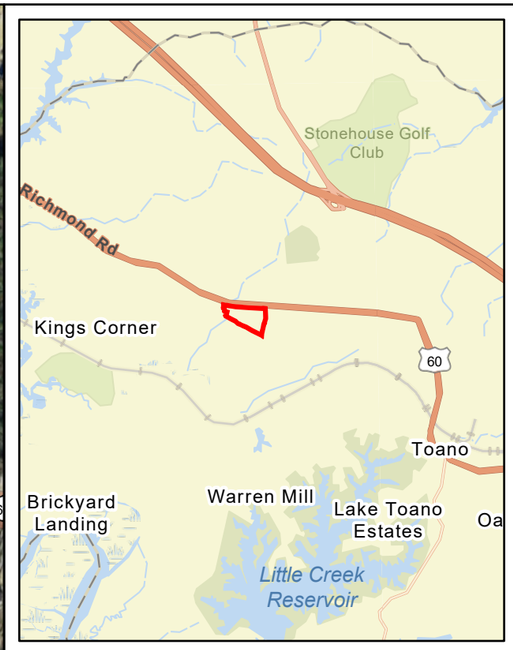
Kimley»Horn

N

DATE:
06-07-2024

FIGURE:
2





SUBJECT PROPERTY

SITE FEATURES

NOTES:
1. 2021 VBMP AERIAL IMAGERY

0 500 1,000 FT

1 IN =500 FT

HEDERA SOLAR
JAMES CITY COUNTY, VA

PERTINENT SITE FEATURES

Kimley»Horn

N

DATE: 06-07-2024

FIGURE: 3

APPENDIX A

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023
Page: 1 of 12

Photo No. 1



Remarks: General view of overhead powerline easement along Richmond Road.

Location: Northern Boundary

Photo No. 2



Remarks: General view of Ivy Hill Road at the intersection with Richmond Road.

Location: Ivy Hill Road and Richmond Road

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023
Page: 2 of 12

Photo No. 3



Remarks: View of pieces of old overhead powerline and equipment.

Location: Ivy Hill Road Easement

Photo No. 4



Remarks: View of old overhead powerline.

Location: Northern Boundary

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023
Page: 3 of 12

Photo No. 5



Remarks: Typical view of overhead powerline easement along Ivy Hill Road.

Location: Eastern Portion

Photo No. 6



Remarks: View of electrical utility housing along Ivy Hill Road.

Location: Ivy Hill Road and Richmond Road

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023

Photo No. 7



Remarks: View of pole-mo

Location: Ivy Hill Road an

Photo No. 8



Remarks: Typical view of billboards within VDOT right-of-way along Richmond Road.

Location: Northern Boundary

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023
Page: 5 of 12

Photo No. 9



Remarks: Typical view of billboards within VDOT right-of-way along Richmond Road.

Location: Northern Boundary

Photo No. 10



Remarks: General view of Abandoned Structure #1.

Location: Eastern Portion

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023

Photo No. 11



Remarks: View of electrical hook up and unknown conduit on exterior of Abandoned Structure #1.
Location: Eastern Portion

Photo No. 12



Remarks: View of interior of Abandoned Structure #1.

Location: Eastern Portion

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023
Page: 7 of 12

Photo No. 13



Remarks: View of de minimis dumping.

Location: Ivy Hill Road and Hill Lane

Photo No. 14



Remarks: General view of Hill Lane at the intersection with Ivy Hill Road.

Location: Hill Lane

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023
Page: 8 of 12

Photo No. 15



Remarks: General view of Hill Lane within the southern portion of the Subject Property.

Location: Southern Portion

Photo No. 16



Remarks: General view of an unnamed driveway running through the southern portion of the Subject Property off of Hill Lane and adajcent dwelling to the south.

Location: Southern Portion

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023
Page: 9 of 12

Photo No. 17



Remarks: Typical view of young vegetation within the central portion of the Subject Property.
Location: Northern Portion

Photo No. 18



Remarks: Typical view of young vegetation within the central portion of the Subject Property.
Location: Central Portion

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023
Page: 10 of 12

Photo No. 19



Remarks: Typical view of young vegetation within the central portion of the Subject Property.
Location: Central Portion

Photo No. 20



Remarks: View of Edwards Swamp box culvert underneath Richmond Road.

Location: Northwest Corner

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023
Page: 11 of 12

Photo No. 21



Remarks: View of de minimis dumping.

Location: Northwest Corner

Photo No. 22



Remarks: View of stream channel within Edwards Swamp.

Location: Western Portion

Kimley»Horn
2035 Maywill St, Suite 200
Richmond, VA 23230

Hedera Solar

Photograph Sheet

KHA Job No.: 113526017
KHA Rep.: T. Celata
Date: June 7, 2023
Page: 12 of 12

Photo No. 23



Remarks: View of open marsh area within Edwards Swamp.

Location: Western Portion

Photo No. 24



Remarks: View of stream channel within Edwards Swamp.

Location: Western Portion

APPENDIX B

Hedera
James City County
Toano, VA 23168

Inquiry Number: 7657311.2s
May 20, 2024

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Detail Map	3
Map Findings Summary	4
Map Findings	8
Orphan Summary	9
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GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-11
Physical Setting Source Map Findings	A-13
Physical Setting Source Records Searched	PSGR-1

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527 - 21), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E2247 - 16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E1528 - 22) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

JAMES CITY COUNTY
TOANO, VA 23168

COORDINATES

Latitude (North):	37.4017770 - 37˚ 24' 6.39''
Longitude (West):	76.8419320 - 76˚ 50' 30.95''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	336967.0
UTM Y (Meters):	4140832.2
Elevation:	89 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	50021660 TOANO, VA
Version Date:	2022

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20180829
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
JAMES CITY COUNTY
TOANO, VA 23168

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	EVELAND RAYMOND AND	9086 RICHMOND ROAD	LTANKS	Higher	2320, 0.439, WNW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---------- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---------- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROLS ..... Institutional Controls Sites List

Federal ERNS list

ERNS ..... Emergency Response Notification System

Lists of state- and tribal hazardous waste facilities

SHWS ..... This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF ..... Solid Waste Management Facilities

Lists of state and tribal leaking storage tanks

LUST ..... Leaking Underground Storage Tank Tracking Database
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land

Lists of state and tribal registered storage tanks

FEMA UST ..... Underground Storage Tank Listing
UST ..... Registered Petroleum Storage Tanks
AST ..... Registered Petroleum Storage Tanks
INDIAN UST ..... Underground Storage Tanks on Indian Land

State and tribal institutional control / engineering control registries

ENG CONTROLS ..... Engineering Controls Sites Listing
INST CONTROL ..... Voluntary Remediation Program Database

Lists of state and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Remediation Program

Lists of state and tribal brownfield sites

BROWNFIELDS ..... Brownfields Site Specific Assessments

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
IHS OPEN DUMPS ..... Open Dumps on Indian Land

EXECUTIVE SUMMARY

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
US CDL	National Clandestine Laboratory Register

Local Land Records

LIENS 2	CERCLA Lien Information

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
SPILLS	Prep/Spills Database Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System
COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
MINES MRDS	Mineral Resources Data System
FINDS	Facility Index System/Facility Registry System
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing

UXO ..... Unexploded Ordnance Sites
FUELS PROGRAM ..... EPA Fuels Program Registered Listing
PFAS NPL ..... Superfund Sites with PFAS Detections Information
PFAS FEDERAL SITES ..... Federal Sites PFAS Information
PFAS TSCA ..... PFAS Manufacture and Imports Information
PFAS TRIS ..... List of PFAS Added to the TRI
PFAS RCRA MANIFEST ..... PFAS Transfers Identified In the RCRA Database Listing
PFAS ATSDR ..... PFAS Contamination Site Location Listing
PFAS WQP ..... Ambient Environmental Sampling for PFAS
PFAS NPDES ..... Clean Water Act Discharge Monitoring Information
PFAS ECHO ..... Facilities in Industries that May Be Handling PFAS Listing
PFAS ECHO FIRE TRAINING Facilities in Industries that May Be Handling PFAS Listing
PFAS PART 139 AIRPORT ... All Certified Part 139 Airports PFAS Information Listing
AQUEOUS FOAM NRC ..... Aqueous Foam Related Incidents Listing
BIOSOLIDS ..... ICIS-NPDES Biosolids Facility Data
AIRS ..... Permitted Airs Facility List
NPDES ..... Comprehensive Environmental Data System
COAL ASH ..... Coal Ash Disposal Sites
DRYCLEANERS ..... Drycleaner List
ENF ..... Enforcement Actions Data
Financial Assurance ..... Financial Assurance Information Listing
TIER 2 ..... Tier 2 Information Listing
UIC ..... Underground Injection Control Wells
UST FINDER RELEASE ..... UST Finder Releases Database
UST FINDER ..... UST Finder Database

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ..... EDR Proprietary Manufactured Gas Plants
EDR Hist Auto ..... EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ..... EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ..... Recovered Government Archive Solid Waste Facilities List
RGA LUST ..... Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

Lists of state and tribal leaking storage tanks

LTANKS: The Leaking Tanks Database contains current Leaking petroleum tanks. The data comes from the Department of Environmental Quality.

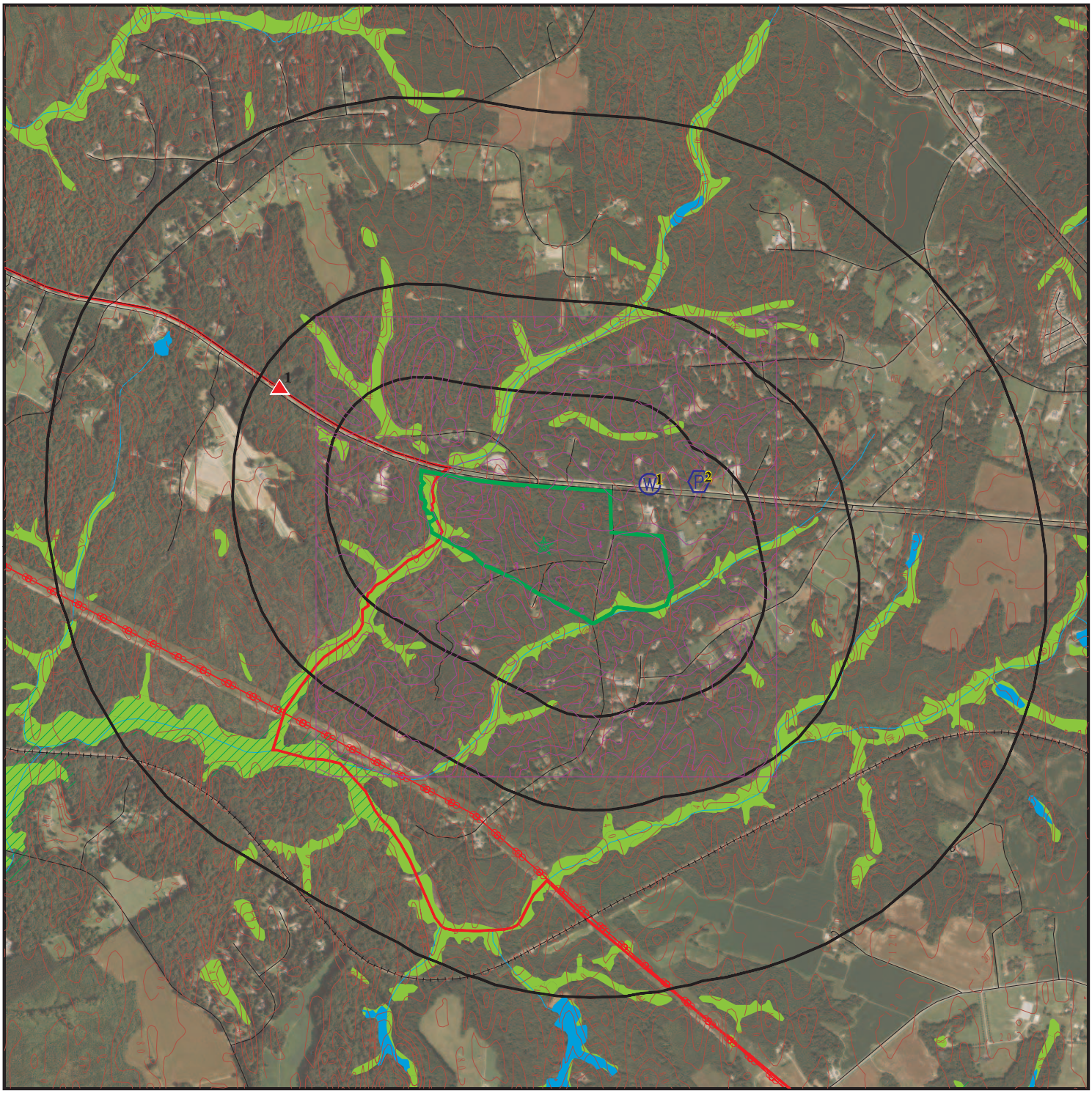
A review of the LTANKS list, as provided by EDR, and dated 02/05/2024 has revealed that there is 1 LTANKS site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EVELAND RAYMOND AND Facility Status: Closed CEDS Facility Id: 200000890677 Pollution Complaint #: 20205167	9086 RICHMOND ROAD	WNW 1/4 - 1/2 (0.439 mi.)	1	8

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 7657311.2S



0 1/4 1/2 1 Miles

- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- County Boundary
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Hedera	CLIENT: Kimley Horn & Associates
ADDRESS: James City County Toano VA 23168	CONTACT: Trevor Celata INQUIRY #: 7657311.2s
LAT/LONG: 37.401777 / 76.841932	DATE: May 20, 2024 3:01 pm

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DETAIL MAP - 7657311.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/8 1/4 1/2 Miles

- Indian Reservations BIA
- County Boundary
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Hedera	CLIENT: Kimley Horn & Associates
ADDRESS: James City County Toano VA 23168	CONTACT: Trevor Celata INQUIRY #: 7657311.2s
LAT/LONG: 37.401777 / 76.841932	DATE: May 20, 2024 3:02 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
Lists of state- and tribal hazardous waste facilities								
SHWS	N/A		N/A	N/A	N/A	N/A	N/A	N/A
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	NR	NR	0
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
LTANKS	0.500		0	0	1	NR	NR	1
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal institutional control / engineering control registries								
ENG CONTROLS	0.500		0	0	0	NR	NR	0
INST CONTROL	0.500		0	0	0	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
Local Land Records								
LIENS 2	0.001		0	NR	NR	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
SPILLS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
MINES MRDS	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
PFAS NPL	0.250		0	0	NR	NR	NR	0
PFAS FEDERAL SITES	0.250		0	0	NR	NR	NR	0
PFAS TSCA	0.250		0	0	NR	NR	NR	0
PFAS TRIS	0.250		0	0	NR	NR	NR	0
PFAS RCRA MANIFEST	0.250		0	0	NR	NR	NR	0
PFAS ATSDR	0.250		0	0	NR	NR	NR	0
PFAS WQP	0.250		0	0	NR	NR	NR	0
PFAS NPDES	0.250		0	0	NR	NR	NR	0
PFAS ECHO	0.250		0	0	NR	NR	NR	0
PFAS ECHO FIRE TRAINING	0.250		0	0	NR	NR	NR	0
PFAS PART 139 AIRPORT	0.250		0	0	NR	NR	NR	0
AQUEOUS FOAM NRC	0.250		0	0	NR	NR	NR	0
BIOSOLIDS	0.001		0	NR	NR	NR	NR	0
AIRS	0.001		0	NR	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
COAL ASH	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
TIER 2	0.001		0	NR	NR	NR	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UST FINDER RELEASE	0.500		0	0	0	NR	NR	0
UST FINDER	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	0	0	1	0	0	1

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

N/A = This State does not maintain a SHWS list. See the Federal CERCLIS list.

1
WNW
1/4-1/2
0.439 mi.
2320 ft.

EVELAND RAYMOND AND MARION RESIDENCE
9086 RICHMOND ROAD
TOANO, VA 23168

LTANKS **S126226242**
N/A

Relative:
Higher

Actual:
93 ft.

LTANKS:

Name:	EVELAND RAYMOND AND MARION RESIDENCE
Address:	9086 RICHMOND ROAD
City,State,Zip:	TOANO, VA 23168
City,State,Zip:	TOANO, VA 23168
Region:	TRO
CEDS Facility Id:	200000890677
Case Status:	**Closed**
Pollution Complaint #:	20205167
Reported:	03/12/2020
Case Closed Date:	08/14/2020
Program:	RP Lead
Federally Regulated UST (Y/N):	N
Regulated Petroleum UST (1):	N
Excluded UST (1):	N
Deferred UST (1):	N
Partially Deferred UST (1):	N
Exempt 1 UST (2):	N
Exempt 2 Heating Oil UST (2):	N
Small Heating Oil AST (2):	Y
Regulated AST (3):	N
Unregulated AST (3):	N
Other Y/N:	N
Unknown Y/N:	N
Other Description:	Not reported
Heating Oil Category:	Category 3
Changed By:	Not reported
Changed Date:	Not reported
Inserted By:	Not reported
Inserted Date:	Not reported
Verified By:	Not reported
Verify Date:	Not reported
Reference Point:	Not reported
RST ID:	Not reported
RST Poll Complaint Number:	Not reported
Des First Name:	Not reported
Des Last Name:	Not reported
RST Rec Code:	Not reported
RST Priority:	Not reported
RST Fed Reg Tank:	Not reported
RST Responsibility Ind:	Not reported
RST Suspect Confirm Ind:	Not reported
Facility Location:	Not reported
FIC Description:	Not reported
Latitude:	Not reported
Longitude:	Not reported

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: N/A
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 12/20/2023
Date Data Arrived at EDR: 12/20/2023
Date Made Active in Reports: 01/24/2024
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 03/26/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/29/2024
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 02/22/2024
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 01/29/2024
Date Data Arrived at EDR: 02/01/2024
Date Made Active in Reports: 02/22/2024
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/14/2024
Date Data Arrived at EDR: 02/16/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 48

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 02/13/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/21/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 02/13/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/21/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/12/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

SHWS: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: Department of Environmental Quality
Telephone: 804-698-4236
Last EDR Contact: 03/08/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: N/A

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF: Solid Waste Management Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/19/2024
Number of Days to Update: 18

Source: Department of Environmental Quality
Telephone: 804-698-4238
Last EDR Contact: 02/26/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Semi-Annually

Lists of state and tribal leaking storage tanks

LUST REG VA: Leaking Underground Storage Tank List

Leaking underground storage tank site locations. Includes: counties of Albemarle, Augusta, Bath, Clarke, Fluvanna, Frederick, Greene, Highland, Nelson, Page, Rockbridge, Rockingham, Shenandoah, Warren; cities of Buena Vista, Charlottesville, Harrisonburg, Lexington, Staunton, Waynesboro, Winchester.

Date of Government Version: 12/06/2011
Date Data Arrived at EDR: 12/08/2011
Date Made Active in Reports: 01/16/2012
Number of Days to Update: 39

Source: Department of Environmental Quality Valley Regional Office
Telephone: 540-574-7800
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: No Update Planned

LUST REG TD: Leaking Underground Storage Tank Sites

Leaking underground storage tank site locations. Includes: counties of Accomack, Isle of Wight, James City, Northampton, Southampton, York; cities of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach, Williamsburg.

Date of Government Version: 06/30/2013
Date Data Arrived at EDR: 07/05/2013
Date Made Active in Reports: 09/16/2013
Number of Days to Update: 73

Source: Department of Environmental Quality Tidewater Regional Office
Telephone: trofoia@deq.vir
Last EDR Contact: 09/26/2016
Next Scheduled EDR Contact: 01/09/2017
Data Release Frequency: Quarterly

LUST REG SW: Leaking Underground Storage Tank Database

Leaking underground storage tank site locations. Includes: counties of Bland, Buchanan, Carroll, Dickenson, Grayson, Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise, Wythe; cities of Bristol, Galax, Norton.

Date of Government Version: 07/15/2013
Date Data Arrived at EDR: 07/18/2013
Date Made Active in Reports: 09/16/2013
Number of Days to Update: 60

Source: Department of Environmental Quality Southwest Regional Office
Telephone: 276-676-4800
Last EDR Contact: 10/11/2016
Next Scheduled EDR Contact: 01/23/2017
Data Release Frequency: No Update Planned

LUST REG SC: Leaking Underground Storage Tanks

Leaking underground storage tank site locations. Includes: counties of Amherst, Appomattox, Buckingham, Campbell, Charlotte, Cumberland, Halifax, Lunenburg, Mecklenburg, Nottoway, Pittsylvania, Prince Deward; cities of Danville, Lynchburg.

Date of Government Version: 09/06/2013
Date Data Arrived at EDR: 09/06/2013
Date Made Active in Reports: 09/17/2013
Number of Days to Update: 11

Source: Department of Environmental Quality, South Central Region
Telephone: 434-582-5120
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Semi-Annually

LUST REG NO: Leaking Underground Storage Tank Tracking Database

Leaking underground storage tank site locations. Includes: counties of Arlington, Caroline, Culpeper, Fairfax, Fauquier, King George, Loudoun, Louisa, Madison, Orange, Prince William, Rappahannock, Spotsylvania, Stafford; cities of Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas, Manassas Park.

Date of Government Version: 05/18/2004
Date Data Arrived at EDR: 05/22/2004
Date Made Active in Reports: 07/09/2004
Number of Days to Update: 48

Source: Department of Environmental Quality Northern Regional Office
Telephone: 703-583-3800
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG PD: Leaking Underground Storage Tank Sites

Leaking underground storage tank site locaitons. Includes: counties of Amelia, Brunswick, Charles City, Chesterfield, Dinwiddie, Essex, Gloucester, Goochland, Greensville, Hanover, Henrico, King and Queen, King William, Lancaster, Mathews, Middlesex, New Kent, Northumberland, Powhatan, Prince George, Richmond, Surry, Sussex, Westmoreland; cities of Colonial Heights, Emporia, Hopewell, Petersburg.

Date of Government Version: 12/02/2014
Date Data Arrived at EDR: 12/04/2014
Date Made Active in Reports: 01/16/2015
Number of Days to Update: 43

Source: Department of Environmental Quality Piedmont Regional Office
Telephone: 804-527-5020
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Quarterly

LUST REG WC: Leaking Underground Storage Tank List

Leaking underground storage tank site locations. Includes: counties of Alleghany, Bedford, Botetourt, Craig, Floyd, Franklin, Giles, Henry, Montgomery, Patrick, Pulaski, Roanoke; cities of Bedford, Clifton Forge, Covington, Martinsville, Radford, Roanoke, Salem.

Date of Government Version: 06/04/2015
Date Data Arrived at EDR: 06/05/2015
Date Made Active in Reports: 07/07/2015
Number of Days to Update: 32

Source: Department of Environmental Quality West Central Regional Office
Telephone: 540-562-6700
Last EDR Contact: 08/29/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: No Update Planned

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/04/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/25/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

LTANKS: Leaking Petroleum Storage Tanks
Includes releases of petroleum from underground storage tanks and aboveground storage tanks.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/23/2024
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 5
Source: Department of Environmental Quality
Telephone: 804-698-4010
Last EDR Contact: 02/23/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Quarterly

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 11/16/2023
Date Data Arrived at EDR: 11/16/2023
Date Made Active in Reports: 02/13/2024
Number of Days to Update: 89
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

UST: Registered Petroleum Storage Tanks
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 02/22/2024
Date Made Active in Reports: 02/27/2024
Number of Days to Update: 5
Source: Department of Environmental Quality
Telephone: 804-698-4010
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Quarterly

AST: Registered Petroleum Storage Tanks
Registered Aboveground Storage Tanks.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 02/22/2024
Date Made Active in Reports: 02/27/2024
Number of Days to Update: 5
Source: Department of Environmental Quality
Telephone: 804-698-4010
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56
Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/17/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/24/2023
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 56

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

State and tribal institutional control / engineering control registries

ENG CONTROLS: Engineering Controls Sites Listing

A listing of sites with Engineering Controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/10/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 79

Source: Department of Environmental Quality
Telephone: 804-698-4228
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

INST CONTROL: Voluntary Remediation Program Database

Sites included in the Voluntary Remediation Program database that have deed restrictions.

Date of Government Version: 01/10/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 79

Source: Department of Environmental Quality
Telephone: 804-698-4228
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

Lists of state and tribal voluntary cleanup sites

VRP: Voluntary Remediation Program

The Voluntary Cleanup Program encourages owners of elected contaminated sites to take the initiative and conduct voluntary cleanups that meet state environmental standards.

Date of Government Version: 01/10/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 79

Source: Department of Environmental Quality
Telephone: 804-698-4228
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/18/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Varies

Lists of state and tribal brownfield sites

BROWNFIELDS: Brownfields Site Specific Assessments

To qualify for Brownfields Assessment, the site must meet the Federal definition of a Brownfields and should have contaminant issues that need to be addressed and a redevelopment plan supported by the local government and community. Virginia's Department of Environmental Quality performs brownfields assessments under a cooperative agreement with the U.S. Environmental Protection Agency at no cost to communities, property owners or, prospective purchasers. The assessment is an evaluation of environmental impacts caused by previous site uses similar to a Phase II Environmental Assessment.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 04/05/2024
Number of Days to Update: 79

Source: Department of Environmental Quality
Telephone: 804-698-4207
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 03/11/2024
Date Data Arrived at EDR: 03/12/2024
Date Made Active in Reports: 05/10/2024
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/12/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 04/22/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 04/19/2024
Next Scheduled EDR Contact: 08/04/2024
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Quarterly

Local Land Records

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 12/12/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/20/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

SPILLS: Prep/Spills Database Listing

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment. PREP staff often work to assist local emergency responders, other state agencies, federal agencies, and responsible parties, as may be needed, to manage pollution incidents. Oil spills, fish kills, and hazardous materials spills are examples of incidents that may involve the DEQ's PREP Program.

Date of Government Version: 02/21/2024
Date Data Arrived at EDR: 02/22/2024
Date Made Active in Reports: 02/29/2024
Number of Days to Update: 7

Source: Department of Environmental Quality
Telephone: 804-698-4287
Last EDR Contact: 02/22/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Quarterly

SPILLS BRL: Prep/Spills Database Listing

A listing of spills locations located in the Blue Ridge Regional area, Lynchburg.

Date of Government Version: 09/18/2009
Date Data Arrived at EDR: 09/18/2009
Date Made Active in Reports: 10/06/2009
Number of Days to Update: 18

Source: DEQ, Blue Ridge Regional Office
Telephone: 434-582-6218
Last EDR Contact: 11/28/2011
Next Scheduled EDR Contact: 03/12/2012
Data Release Frequency: Varies

SPILLS VA: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 08/08/2012
Date Data Arrived at EDR: 08/09/2012
Date Made Active in Reports: 10/05/2012
Number of Days to Update: 57

Source: Department of Environmental Quality, Valley Regional Office
Telephone: 540-574-7800
Last EDR Contact: 05/06/2013
Next Scheduled EDR Contact: 08/19/2013
Data Release Frequency: Quarterly

SPILLS TD: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 09/17/2009
Date Data Arrived at EDR: 09/23/2009
Date Made Active in Reports: 10/06/2009
Number of Days to Update: 13

Source: Department of Environmental Quality, Tidewater Region
Telephone: trofoia@deq.vir
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: Quarterly

SPILLS SW: Reportable Spills

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 01/21/2010
Date Data Arrived at EDR: 01/22/2010
Date Made Active in Reports: 02/16/2010
Number of Days to Update: 25

Source: Department of Environmental Quality, Southwest Region
Telephone: 276-676-4839
Last EDR Contact: 07/13/2012
Next Scheduled EDR Contact: 10/29/2012
Data Release Frequency: No Update Planned

SPILLS PD: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 10/20/2009
Date Data Arrived at EDR: 10/29/2009
Date Made Active in Reports: 12/03/2009
Number of Days to Update: 35

Source: Department of Environmental Quality, Piedmont Region
Telephone: 804-527-5020
Last EDR Contact: 02/06/2012
Next Scheduled EDR Contact: 05/21/2012
Data Release Frequency: Quarterly

SPILLS NO: PREP Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 09/23/2009
Date Data Arrived at EDR: 09/29/2009
Date Made Active in Reports: 10/30/2009
Number of Days to Update: 31

Source: Department of Environmental Quality, Northern Region
Telephone: 703-583-3864
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

SPILLS PC: Pollution Complaint Database

Pollution Complaints Database. The pollution reports contained in the PC database include the initial release reporting of Leaking Underground Storage Tanks and all other releases of petroleum to the environment as well as releases to state waters. The database is current through 12/1/93. Since that time, all spill and pollution reporting information has been collected and tracked through the DEQ regional offices.

Date of Government Version: 06/01/1996
Date Data Arrived at EDR: 10/22/1996
Date Made Active in Reports: 11/21/1996
Number of Days to Update: 30

Source: Department of Environmental Quality
Telephone: 804-698-4287
Last EDR Contact: 03/08/2010
Next Scheduled EDR Contact: 06/21/2010
Data Release Frequency: No Update Planned

SPILLS WC: Prep Database

The Department of Environmental Quality's POLLUTION RESPONSE PROGRAM, known as PREP, provides for responses to air, water, and waste pollution incidents in order to protect human health and the environment.

Date of Government Version: 09/21/2009
Date Data Arrived at EDR: 09/29/2009
Date Made Active in Reports: 10/30/2009
Number of Days to Update: 31

Source: Department of Environmental Quality, West Central Region
Telephone: 540-562-6700
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 09/01/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/15/2013
Number of Days to Update: 43

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/04/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 12/12/2023
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 800-438-2474
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/30/2024
Date Data Arrived at EDR: 02/13/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 51

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/11/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 07/30/2021
Date Data Arrived at EDR: 02/03/2023
Date Made Active in Reports: 02/10/2023
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 05/09/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 12/11/2023
Date Data Arrived at EDR: 12/13/2023
Date Made Active in Reports: 02/28/2024
Number of Days to Update: 77

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/13/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA Watch List

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 04/29/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: No Update Planned

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 06/14/2022
Date Made Active in Reports: 03/24/2023
Number of Days to Update: 283

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/14/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 11/13/2023
Date Made Active in Reports: 02/07/2024
Number of Days to Update: 86

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/16/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 01/16/2024
Date Data Arrived at EDR: 01/17/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 70

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/17/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2024
Date Data Arrived at EDR: 02/08/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 56

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 09/19/2023
Date Data Arrived at EDR: 10/03/2023
Date Made Active in Reports: 10/19/2023
Number of Days to Update: 16

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/20/2023
Date Data Arrived at EDR: 04/04/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 66

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 01/16/2024
Date Made Active in Reports: 03/13/2024
Number of Days to Update: 57
Source: Nuclear Regulatory Commission
Telephone: 301-415-0717
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2022
Date Data Arrived at EDR: 11/27/2023
Date Made Active in Reports: 02/22/2024
Number of Days to Update: 87
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 02/23/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 02/23/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/02/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 04/23/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/11/2024
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 5

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 03/28/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2021
Date Data Arrived at EDR: 03/09/2023
Date Made Active in Reports: 03/20/2023
Number of Days to Update: 11

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 03/19/2024
Next Scheduled EDR Contact: 07/01/2024
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 03/03/2023
Date Data Arrived at EDR: 03/03/2023
Date Made Active in Reports: 06/09/2023
Number of Days to Update: 98

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 04/26/2024
Next Scheduled EDR Contact: 08/12/2024
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/16/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 02/29/2024
Date Data Arrived at EDR: 03/01/2024
Date Made Active in Reports: 03/27/2024
Number of Days to Update: 26

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 05/01/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/21/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 43

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/21/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 01/02/2024
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 1

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Quarterly

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 01/07/2022
Date Data Arrived at EDR: 02/24/2023
Date Made Active in Reports: 05/17/2023
Number of Days to Update: 82

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/22/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 02/22/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 11/28/2023
Date Data Arrived at EDR: 11/29/2023
Date Made Active in Reports: 12/11/2023
Number of Days to Update: 12

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/15/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Quarterly

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 08/23/2022
Date Data Arrived at EDR: 11/22/2022
Date Made Active in Reports: 02/28/2023
Number of Days to Update: 98

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 02/22/2024
Next Scheduled EDR Contact: 06/03/2024
Data Release Frequency: Varies

FINDS: Facility Index System/Facility Registry System
Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 11/03/2023
Date Data Arrived at EDR: 11/08/2023
Date Made Active in Reports: 11/20/2023
Number of Days to Update: 12

Source: EPA
Telephone: (215) 814-5000
Last EDR Contact: 02/27/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 12/17/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/04/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites
A listing of unexploded ordnance site locations

Date of Government Version: 09/06/2023
Date Data Arrived at EDR: 09/13/2023
Date Made Active in Reports: 12/11/2023
Number of Days to Update: 89

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/17/2024
Next Scheduled EDR Contact: 09/02/2024
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing
This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/12/2024
Date Data Arrived at EDR: 02/13/2024
Date Made Active in Reports: 04/04/2024
Number of Days to Update: 51

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/14/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Quarterly

PFAS NPL: Superfund Sites with PFAS Detections Information

EPA's Office of Land and Emergency Management and EPA Regional Offices maintain data describing what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-8895
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS FEDERAL SITES: Federal Sites PFAS Information

Several federal entities, such as the federal Superfund program, Department of Defense, National Aeronautics and Space Administration, Department of Transportation, and Department of Energy provided information for sites with known or suspected detections at federal facilities.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS TSCA: PFAS Manufacture and Imports Information

EPA issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. EPA publishes non-confidential business information (non-CBI) and includes descriptive information about each site, corporate parent, production volume, other manufacturing information, and processing and use information.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS TRIS: List of PFAS Added to the TRI

Section 7321 of the National Defense Authorization Act for Fiscal Year 2020 (NDAA) immediately added certain per- and polyfluoroalkyl substances (PFAS) to the list of chemicals covered by the Toxics Release Inventory (TRI) under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) and provided a framework for additional PFAS to be added to TRI on an annual basis.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-566-0250
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS RCRA MANIFEST: PFAS Transfers Identified In the RCRA Database Listing

To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: PFAS, PFOA, PFOS, PERFL, AFFF, GENX, GEN-X (plus the VT waste codes). These keywords were searched for in the following text fields: Manifest handling instructions (MANIFEST_HANDLING_INSTR), Non-hazardous waste description (NON_HAZ_WASTE_DESCRIPTION), DOT printed information (DOT_PRINTED_INFORMATION), Waste line handling instructions (WASTE_LINE_HANDLING_INSTR), Waste residue comments (WASTE_RESIDUE_COMMENTS).

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 01/04/2024
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ATSDR: PFAS Contamination Site Location Listing

PFAS contamination site locations from the Department of Health & Human Services, Center for Disease Control & Prevention. ATSDR is involved at a number of PFAS-related sites, either directly or through assisting state and federal partners. As of now, most sites are related to drinking water contamination connected with PFAS production facilities or fire training areas where aqueous film-forming firefighting foam (AFFF) was regularly used.

Date of Government Version: 06/24/2020
Date Data Arrived at EDR: 03/17/2021
Date Made Active in Reports: 11/08/2022
Number of Days to Update: 601

Source: Department of Health & Human Services
Telephone: 202-741-5770
Last EDR Contact: 04/22/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

PFAS WQP: Ambient Environmental Sampling for PFAS

The Water Quality Portal (WQP) is a part of a modernized repository storing ambient sampling data for all environmental media and tissue samples. A wide range of federal, state, tribal and local governments, academic and non-governmental organizations and individuals submit project details and sampling results to this public repository. The information is commonly used for research and assessments of environmental quality.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS NPDES: Clean Water Act Discharge Monitoring Information

Any discharger of pollutants to waters of the United States from a point source must have a National Pollutant Discharge Elimination System (NPDES) permit. The process for obtaining limits involves the regulated entity (permittee) disclosing releases in a NPDES permit application and the permitting authority (typically the state but sometimes EPA) deciding whether to require monitoring or monitoring with limits. Caveats and Limitations: Less than half of states have required PFAS monitoring for at least one of their permittees and fewer states have established PFAS effluent limits for permittees. New rulemakings have been initiated that may increase the number of facilities monitoring for PFAS in the future.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ECHO: Facilities in Industries that May Be Handling PFAS Listing

Regulators and the public have expressed interest in knowing which regulated entities may be using PFAS. EPA has developed a dataset from various sources that show which industries may be handling PFAS. Approximately 120,000 facilities subject to federal environmental programs have operated or currently operate in industry sectors with processes that may involve handling and/or release of PFAS.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS ECHO FIRE TRAINING: Facilities in Industries that May Be Handling PFAS Listing

A list of fire training sites was added to the Industry Sectors dataset using a keyword search on the permitted facilitys name to identify sites where fire-fighting foam may have been used in training exercises. Additionally, you may view an example spreadsheet of the subset of fire training facility data, as well as the keywords used in selecting or deselecting a facility for the subset. as well as the keywords used in selecting or deselecting a facility for the subset. These keywords were tested to maximize accuracy in selecting facilities that may use fire-fighting foam in training exercises, however, due to the lack of a required reporting field in the data systems for designating fire training sites, this methodology may not identify all fire training sites or may potentially misidentify them.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PFAS PART 139 AIRPORT: All Certified Part 139 Airports PFAS Information Listing

Since July 1, 2006, all certified part 139 airports are required to have fire-fighting foam onsite that meet military specifications (MIL-F-24385) (14 CFR 139.317). To date, these military specification fire-fighting foams are fluorinated and have been historically used for training and extinguishing. The 2018 FAA Reauthorization Act has a provision stating that no later than October 2021, FAA shall not require the use of fluorinated AFFF. This provision does not prohibit the use of fluorinated AFFF at Part 139 civilian airports; it only prohibits FAA from mandating its use. The Federal Aviation Administration?s document AC 150/5210-6D - Aircraft Fire Extinguishing Agents provides guidance on Aircraft Fire Extinguishing Agents, which includes Aqueous Film Forming Foam (AFFF).

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-272-0167
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

AQUEOUS FOAM NRC: Aqueous Foam Related Incidents Listing

The National Response Center (NRC) serves as an emergency call center that fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. The spreadsheets posted to the NRC website contain initial incident data that has not been validated or investigated by a federal/state response agency. Response center calls from 1990 to the most recent complete calendar year where there was indication of Aqueous Film Forming Foam (AFFF) usage are included in this dataset. NRC calls may reference AFFF usage in the ?Material Involved? or ?Incident Description? fields.

Date of Government Version: 12/28/2023
Date Data Arrived at EDR: 12/28/2023
Date Made Active in Reports: 03/04/2024
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 202-267-2675
Last EDR Contact: 04/05/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 12/16/2016
Date Data Arrived at EDR: 01/06/2017
Date Made Active in Reports: 03/10/2017
Number of Days to Update: 63

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: No Update Planned

PCS ENF: Enforcement data

No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

BIOSOLIDS: ICIS-NPDES Biosolids Facility Data

The data reflects compliance information about facilities in the biosolids program.

Date of Government Version: 12/31/2023
Date Data Arrived at EDR: 01/03/2024
Date Made Active in Reports: 01/16/2024
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-564-4700
Last EDR Contact: 04/16/2024
Next Scheduled EDR Contact: 07/29/2024
Data Release Frequency: Varies

PFAS: Per- and Polyfluoroalkyl Substances

PFOS and PFOA stand for perfluorooctane sulfonate and perfluorooctanoic acid, respectively. Both are fluorinated organic chemicals, part of a larger family of compounds referred to as perfluoroalkyl substances (PFASs).

Date of Government Version: 04/01/2024
Date Data Arrived at EDR: 04/17/2024
Date Made Active in Reports: 05/01/2024
Number of Days to Update: 14

Source: Department of Environmental Quality
Telephone: 804-698-4336
Last EDR Contact: 04/15/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

AIRS: Permitted Airs Facility List

A listing of permitted Airs facilities.

Date of Government Version: 12/06/2023
Date Data Arrived at EDR: 12/06/2023
Date Made Active in Reports: 03/01/2024
Number of Days to Update: 86

Source: Department of Environmental Quality
Telephone: 804-698-4000
Last EDR Contact: 03/11/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: Annually

CEDS: Comprehensive Environmental Data System

Virginia Water Protection Permits, Virginia Pollution Discharge System (point discharge) permits and Virginia Pollution Abatement (no point discharge) permits.

Date of Government Version: 11/27/2023
Date Data Arrived at EDR: 01/23/2024
Date Made Active in Reports: 04/10/2024
Number of Days to Update: 78

Source: Department of Environmental Quality
Telephone: 804-698-4077
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Quarterly

COAL ASH: Coal Ash Disposal Sites

A listing of facilities with coal ash impoundments.

Date of Government Version: 12/26/2023
Date Data Arrived at EDR: 12/26/2023
Date Made Active in Reports: 03/19/2024
Number of Days to Update: 84

Source: Department of Environmental Protection
Telephone: 804-698-4285
Last EDR Contact: 03/25/2024
Next Scheduled EDR Contact: 06/10/2024
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner List

A listing of registered drycleaners.

Date of Government Version: 04/02/2024
Date Data Arrived at EDR: 04/04/2024
Date Made Active in Reports: 04/08/2024
Number of Days to Update: 4

Source: Department of Environmental Quality
Telephone: 804-698-4407
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Varies

ENFORCEMENT: Enforcement Actions Data

A listing of enforcement actions.

Date of Government Version: 09/26/2023
Date Data Arrived at EDR: 09/28/2023
Date Made Active in Reports: 10/24/2023
Number of Days to Update: 26

Source: Department of Environmental Quality
Telephone: 804-698-4031
Last EDR Contact: 05/13/2024
Next Scheduled EDR Contact: 07/08/2024
Data Release Frequency: Quarterly

FIN ASSURANCE 1: Financial Assurance Information Listing

A listing of financial assurance information for underground storage tank facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 01/23/2024
Date Data Arrived at EDR: 01/24/2024
Date Made Active in Reports: 04/11/2024
Number of Days to Update: 78

Source: Department of Environmental Quality
Telephone: 804-698-4205
Last EDR Contact: 04/22/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

FIN ASSURANCE 2: Financial Assurance Information listing
Solid waste financial assurance information.

Date of Government Version: 01/23/2024
Date Data Arrived at EDR: 01/24/2024
Date Made Active in Reports: 04/15/2024
Number of Days to Update: 82

Source: Department of Environmental Quality
Telephone: 804-698-4123
Last EDR Contact: 04/22/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Varies

TIER 2: Tier 2 Information Listing
A listing of facilities which store or manufacture hazardous materials and submit a chemical inventory report.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 09/15/2023
Date Made Active in Reports: 12/07/2023
Number of Days to Update: 83

Source: Department of Environmental Quality
Telephone: 804-698-4159
Last EDR Contact: 03/11/2024
Next Scheduled EDR Contact: 06/24/2024
Data Release Frequency: No Update Planned

UIC: Underground Injection Control Wells
A listing of underground injection controls wells.

Date of Government Version: 01/23/2024
Date Data Arrived at EDR: 01/24/2024
Date Made Active in Reports: 04/11/2024
Number of Days to Update: 78

Source: Department of Mines, Minerals and Energy
Telephone: 276-415-9700
Last EDR Contact: 04/24/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

UST FINDER: UST Finder Database
EPA developed UST Finder, a web map application containing a comprehensive, state-sourced national map of underground storage tank (UST) and leaking UST (LUST) data. It provides the attributes and locations of active and closed USTs, UST facilities, and LUST sites from states and from Tribal lands and US territories . UST Finder contains information about proximity of UST facilities and LUST sites to: surface and groundwater public drinking water protection areas; estimated number of private domestic wells and number of people living nearby; and flooding and wildfires.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 10/04/2023
Date Made Active in Reports: 01/18/2024
Number of Days to Update: 106

Source: Environmental Protection Agency
Telephone: 202-564-0394
Last EDR Contact: 05/08/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Varies

UST FINDER RELEASE: UST Finder Releases Database
US EPA's UST Finder data is a national composite of leaking underground storage tanks. This data contains information about, and locations of, leaking underground storage tanks. Data was collected from state sources and standardized into a national profile by EPA's Office of Underground Storage Tanks, Office of Research and Development, and the Association of State and Territorial Solid Waste Management Officials.

Date of Government Version: 06/08/2023
Date Data Arrived at EDR: 10/31/2023
Date Made Active in Reports: 01/18/2024
Number of Days to Update: 79

Source: Environmental Protecton Agency
Telephone: 202-564-0394
Last EDR Contact: 05/08/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: Semi-Annually

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Virgina.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/20/2014
Number of Days to Update: 203

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Environmental Quality in Virgina and at the Regional VA Levels.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/15/2014
Number of Days to Update: 198

Source: Department of Environmental Quality
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/05/2024
Date Data Arrived at EDR: 02/06/2024
Date Made Active in Reports: 04/25/2024
Number of Days to Update: 79

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/07/2024
Next Scheduled EDR Contact: 08/19/2024
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 03/29/2024
Next Scheduled EDR Contact: 07/15/2024
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 11/30/2023
Date Made Active in Reports: 12/01/2023
Number of Days to Update: 1

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 04/25/2024
Next Scheduled EDR Contact: 08/05/2024
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/08/2024
Next Scheduled EDR Contact: 07/22/2024
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/13/2024
Next Scheduled EDR Contact: 08/26/2024
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/01/2024
Next Scheduled EDR Contact: 06/17/2024
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 804-692-1900

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

HEDERA
JAMES CITY COUNTY
TOANO, VA 23168

TARGET PROPERTY COORDINATES

Latitude (North):	37.401777 - 37˚ 24' 6.40''
Longitude (West):	76.841932 - 76˚ 50' 30.96''
Universal Tranverse Mercator:	Zone 18
UTM X (Meters):	336967.0
UTM Y (Meters):	4140832.2
Elevation:	89 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	50021660 TOANO, VA
Version Date:	2022

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

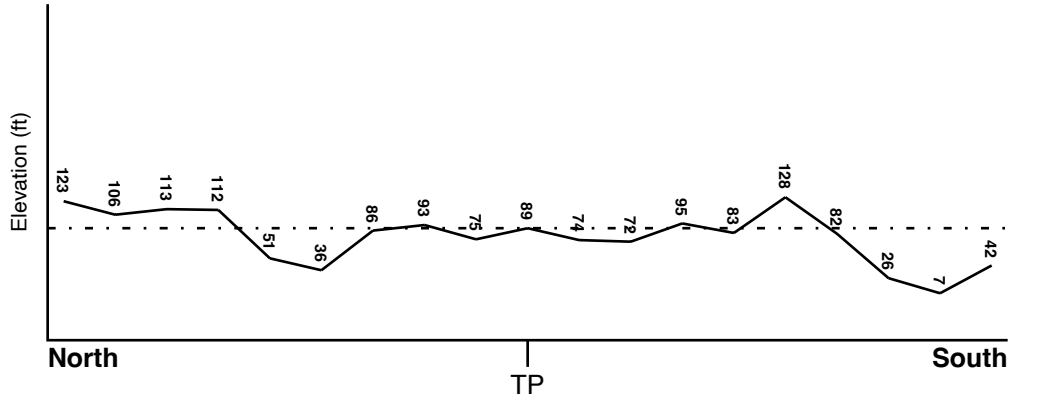
TOPOGRAPHIC INFORMATION

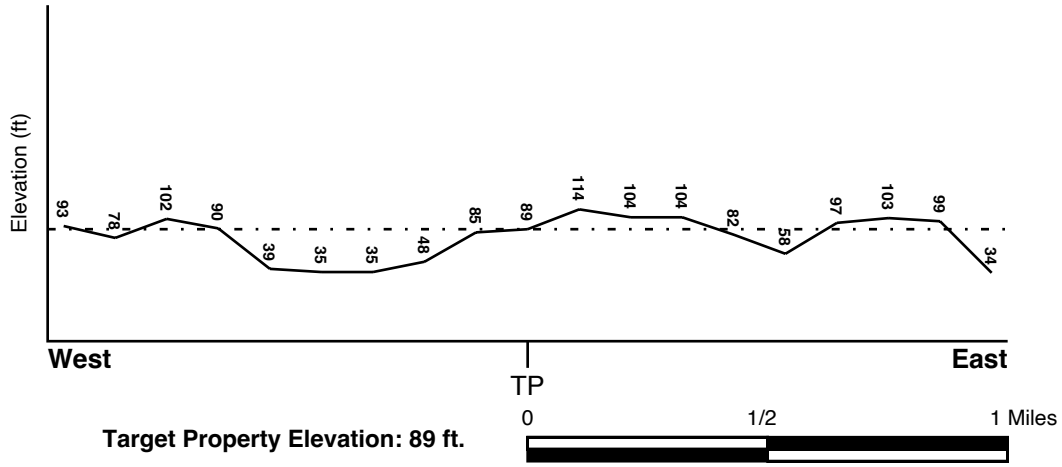
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 89 ft.

0 1/2 1 Miles

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
51095C0040C	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
TOANO	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site--specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

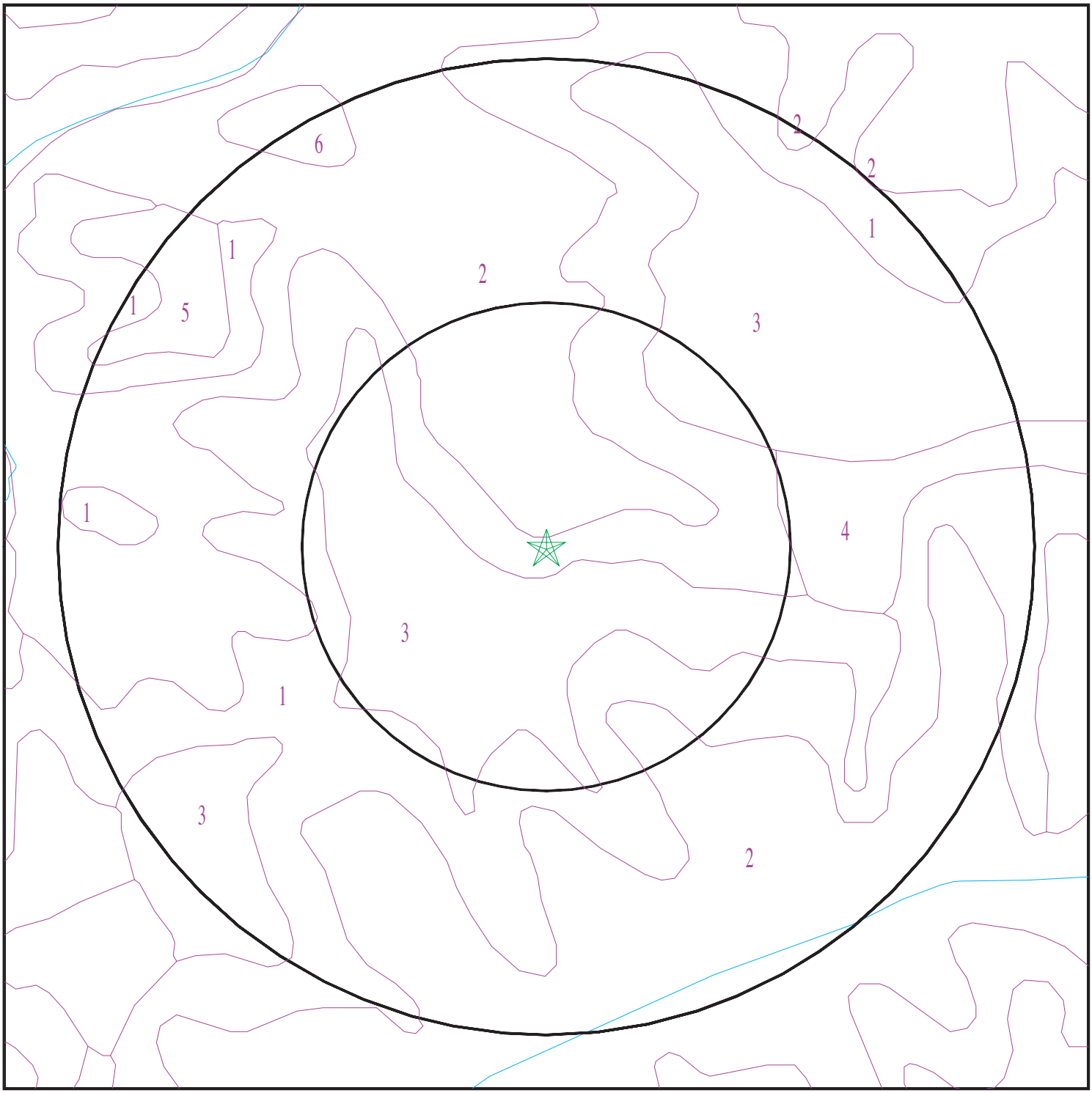
Era:	Cenozoic
System:	Tertiary
Series:	Miocene
Code:	Tm *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratified Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 7657311.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Hedera	CLIENT:	Kimley Horn & Associates
ADDRESS:	James City County Toano VA 23168	CONTACT:	Trevor Celata
LAT/LONG:	37.401777 / 76.841932	INQUIRY #:	7657311.2s
		DATE:	May 20, 2024 3:03 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: Uchee

Soil Surface Texture: loamy fine sand

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 76 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	loamy fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5
2	24 inches	55 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5
3	55 inches	64 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5

Soil Map ID: 2

Soil Component Name: Emporia

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 114 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	12 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 4	Max: 6 Min: 3.6
2	12 inches	57 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 4	Max: 6 Min: 3.6
3	57 inches	75 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 4	Max: 6 Min: 3.6

Soil Map ID: 3

Soil Component Name: Kempsville

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 114 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6 Min: 4.5
2	14 inches	55 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6 Min: 4.5
3	55 inches	68 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 6 Min: 4.5

Soil Map ID: 4

Soil Component Name: Uchee

Soil Surface Texture: loamy fine sand

Hydrologic Group: Class A - High infiltration rates. Soils are deep, well drained to excessively drained sands and gravels.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 130 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	loamy fine sand	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5
2	24 inches	55 inches	sandy clay loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5
3	55 inches	64 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand.	Max: 14 Min: 1.4	Max: 5.5 Min: 4.5

Soil Map ID: 5

Soil Component Name: Slagle

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 69 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 0.01	Max: 5.5 Min: 3.6
2	9 inches	25 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 0.01	Max: 5.5 Min: 3.6
3	25 inches	59 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 0.01	Max: 5.5 Min: 3.6

Soil Map ID: 6

Soil Component Name: Udorthents

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class:
Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

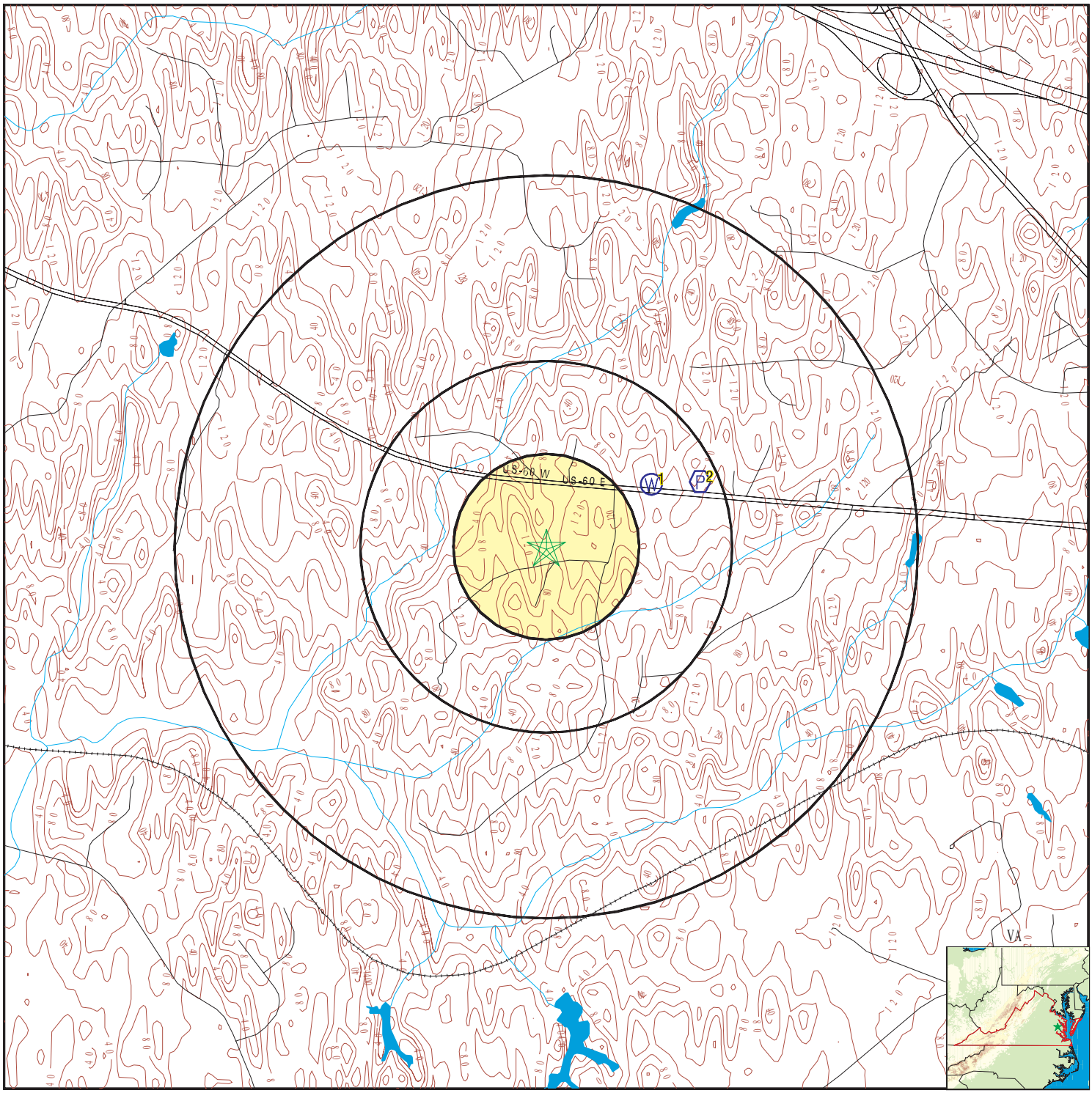
MAP ID	WELL ID	LOCATION FROM TP
2	VA3095617	1/4 - 1/2 Mile ENE

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	VA7000000001067	1/4 - 1/2 Mile ENE

PHYSICAL SETTING SOURCE MAP - 7657311.2s



0 1/4 1/2 1 Miles

- County Boundary
- Major Roads
- Contour Lines
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons
- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

N

SITE NAME:	Hedera	CLIENT:	Kimley Horn & Associates
ADDRESS:	James City County Toano VA 23168	CONTACT:	Trevor Celata
		INQUIRY #:	7657311.2s
LAT/LONG:	37.401777 / 76.841932	DATE:	May 20, 2024 3:03 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
ENE | **VA WELLS** | **VA7000000001067**
1/4 - 1/2 Mile
Higher

WELLS:

TINWSF:	2644296	PWS ID:	3095315
System Name:	EXTRA MILE LANDSCAPES	Type:	Well
Facility Name:	DEEP WELL	Fed Primary Src Class:	Groundwater
PWS Fed Class:	Non-Community	Population Served:	118
Max Production:	3750 GPD	Avg Daily Production:	1250 GPD

2
ENE | **FRDS PWS** | **VA3095617**
1/4 - 1/2 Mile
Lower

Epa region:	03	State:	VA
Pwsid:	VA3095617	Pwsname:	STONEHOUSE COMMUNITY CHURCH
Cityserved:	Not Reported	Stateserved:	VA
Zipserved:	Not Reported	Fipscounty:	51095
Status:	Closed	Retpopsrvd:	150
Pwssvcconn:	1	Psource longname:	Groundwater
Pwstype:	TNCWS	Owner:	Private
Contact:	STONEHOUSE COMMUNITY CH	Contactorgname:	Not Reported
Contactphone:	757-566-8590	Contactaddress1:	8824 RICHMOND ROAD
Contactaddress2:	Not Reported	Contactcity:	TOANO
Contactstate:	VA	Contactzip:	23168
Pwsactivitycode:	I		

PWS ID:	VA3095617	PWS type:	System Owner/Responsible Party
PWS name:	MARANATHA CHAPEL	PWS address:	Not Reported
PWS city:	TOANO	PWS state:	VA
PWS zip:	23168	PWS ID:	VA3095617
Activity status:	Active	Date system activated:	8008
Date system deactivated:	Not Reported	Retail population:	00000150
System name:	STONEHOUSE COMMUNITY CHURCH		
System address:	9428 RICHMOND RD	System address:	C/O JIMS PUMP
System city:	TOANO	System state:	VA
System zip:	23168		

County FIPS:	095	City served:	JAMES CITY
Population served:	101 - 500 Persons	Treatment:	Untreated
Latitude:	372415	Longitude:	0765005

Violation id:	3505603	Orig code:	S
State:	VA	Violation Year:	2003
Contamination code:	3100	Contamination Name:	Coliform (TCR)
Violation code:	23	Violation name:	Monitoring, Routine Major (TCR)
Rule code:	110	Rule name:	TCR
Violation measur:	Not Reported	Unit of measure:	Not Reported
State mcl:	Not Reported	Cmp bdt:	04/01/2003
Cmp edt:	06/30/2003		

Violation ID:	3505603	Orig Code:	S
Enforcemnt FY:	2003	Enforcement Action:	08/26/2003

Enforcement Detail:	St Public Notif requested	Enforcement Category:	Informal
Violation ID:	3505603	Orig Code:	S
Enforcemnt FY:	2003	Enforcement Action:	08/26/2003
Enforcement Detail:	St Formal NOV issued	Enforcement Category:	Informal

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

EPA Region 3 Statistical Summary Readings for Zip Code: 23168

Number of sites tested: 4.

Maximum Radon Level: 0.4 pCi/L.
Minimum Radon Level: 0.2 pCi/L.

pCi/L <4	pCi/L 4-10	pCi/L 10-20	pCi/L 20-50	pCi/L 50-100	pCi/L >100
4 (100.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)

Federal EPA Radon Zone for JAMES CITY County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005, 2010 and 2015 from the U.S. Fish and Wildlife Service.

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Virginia Public Water Supplies
Source: Department of Health, Office of Water Programs
Telephone: 804-786-1756

OTHER STATE DATABASE INFORMATION

Virginia Oil and Gas Wells
Source: Department of Mines, Minerals and Energy
Telephone: 804-692-3200
A listing of oil and gas well locations.

RADON

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

EPA Region 3 Statistical Summary Readings
Source: Region 3 EPA
Telephone: 215-814-2082
Radon readings for Delaware, D.C., Maryland, Pennsylvania, Virginia and West Virginia.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary faultlines, prepared in 1975 by the United State Geological Survey

PHYSICAL SETTING SOURCE RECORDS SEARCHED

STREET AND ADDRESS INFORMATION

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Hedera

James City County

Toano, VA 23168

Inquiry Number: 7657311.4

May 20, 2024

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

05/20/24

Site Name:

Hedera
James City County
Toano, VA 23168
EDR Inquiry # 7657311.4

Client Name:

Kimley Horn & Associates
4500 Main Street
Virginia Beach, VA 23462-0000
Contact: Trevor Celata

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Kimley Horn & Associates were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# NA
Project: 113526017

Coordinates:

Latitude:	37.401777 37° 24' 6" North
Longitude:	-76.841932 -76° 50' 31" West
UTM Zone:	Zone 18 North
UTM X Meters:	336971.04
UTM Y Meters:	4141036.32
Elevation:	88.52' above sea level

Maps Provided:

2022	1965
2019	1958
2016	1953
2013	1952
1986	1918
1979	1917
1973	
1972	

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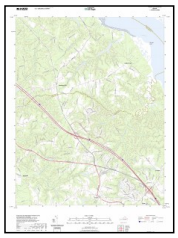
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Topo Sheet Key

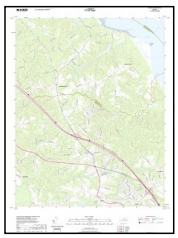
This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2022 Source Sheets



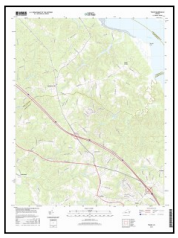
Toano
2022
7.5-minute, 24000

2019 Source Sheets



Toano
2019
7.5-minute, 24000

2016 Source Sheets



Toano
2016
7.5-minute, 24000

2013 Source Sheets



Toano
2013
7.5-minute, 24000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1986 Source Sheets



Toano
1986
7.5-minute, 24000
Aerial Photo Revised 1982

1979 Source Sheets



Toano
1979
7.5-minute, 24000
Aerial Photo Revised 1978

1973 Source Sheets



Toano
1973
7.5-minute, 24000
Aerial Photo Revised 1973

1972 Source Sheets



Toano
1972
7.5-minute, 24000
Aerial Photo Revised 1972

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1965 Source Sheets



Toano
1965
7.5-minute, 24000
Aerial Photo Revised 1963

1958 Source Sheets



Toano
1958
7.5-minute, 24000
Aerial Photo Revised 1951

1953 Source Sheets



Toano
1953
7.5-minute, 24000
Aerial Photo Revised 1948

1952 Source Sheets



TOANO
1952
7.5-minute, 24000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1918 Source Sheets



Toano
1918
15-minute, 62500

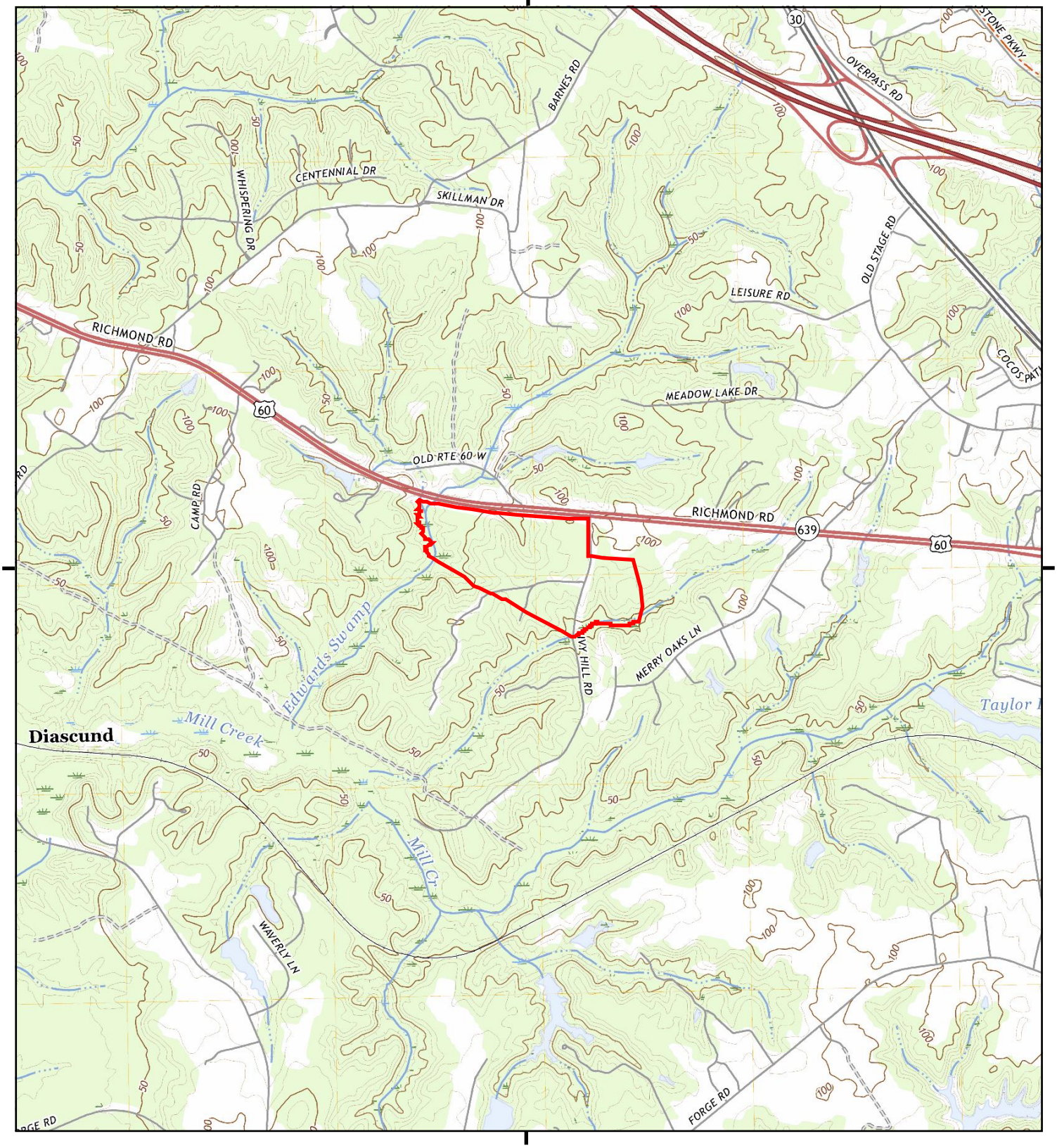
1917 Source Sheets



Toano
1917
15-minute, 62500

Historical Topo Map

2022



This report includes information from the following map sheet(s).

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NW N NE
W E
SW S SE

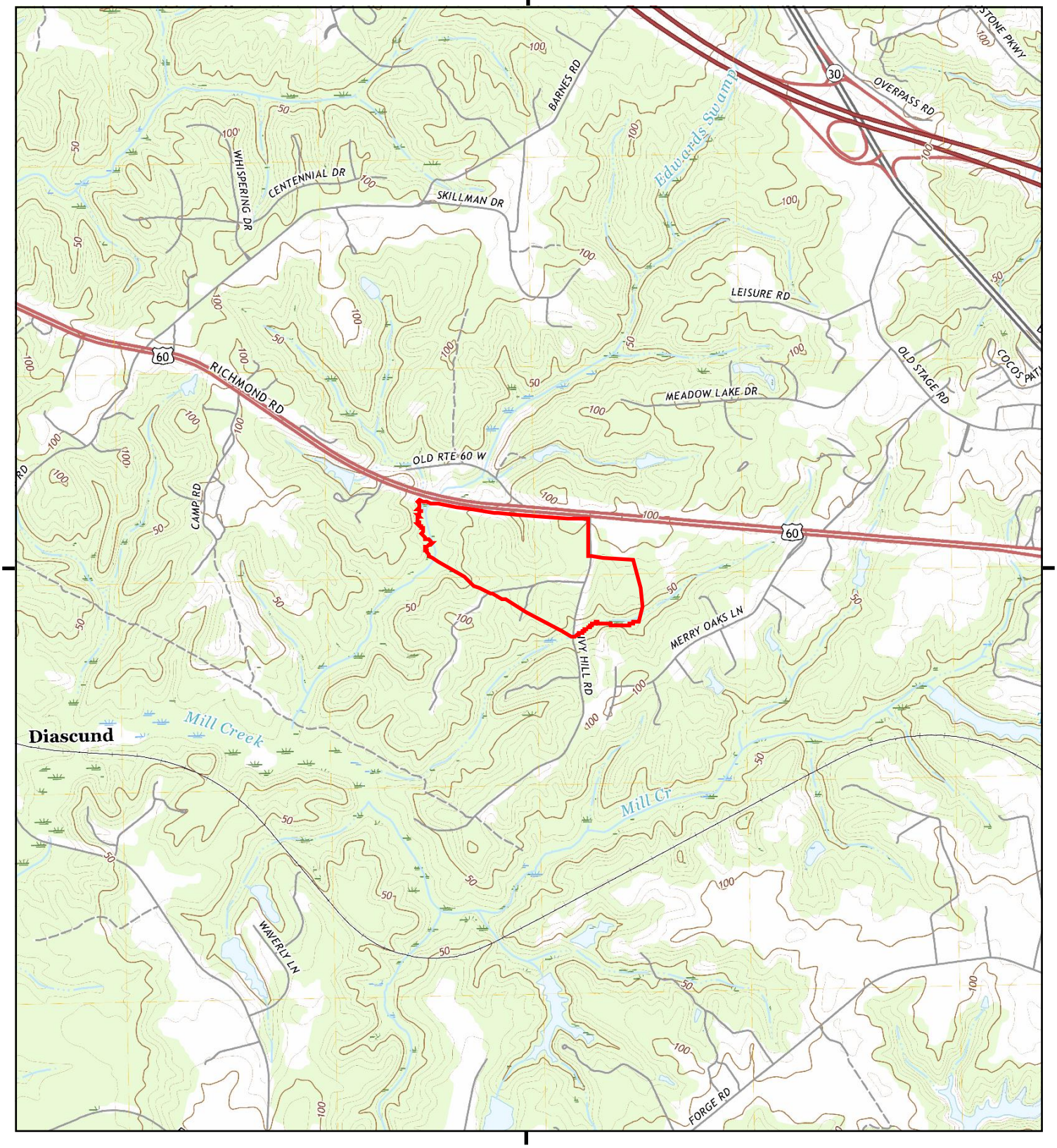
TP, Toano, 2022, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N

Historical Topo Map

2019



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

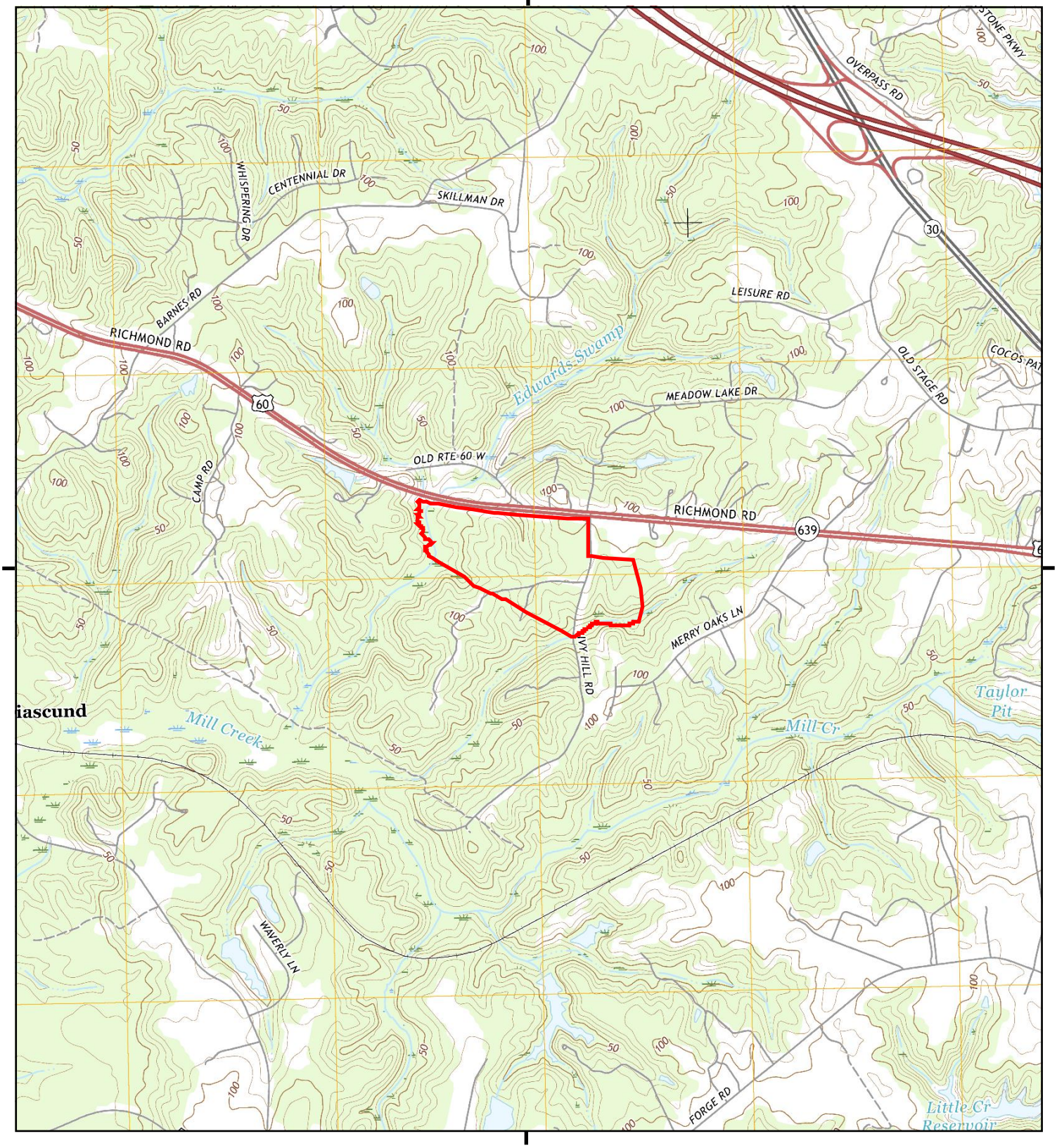
TP, Toano, 2019, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N

Historical Topo Map

2016



This report includes information from the following map sheet(s).

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W E
SW S SE

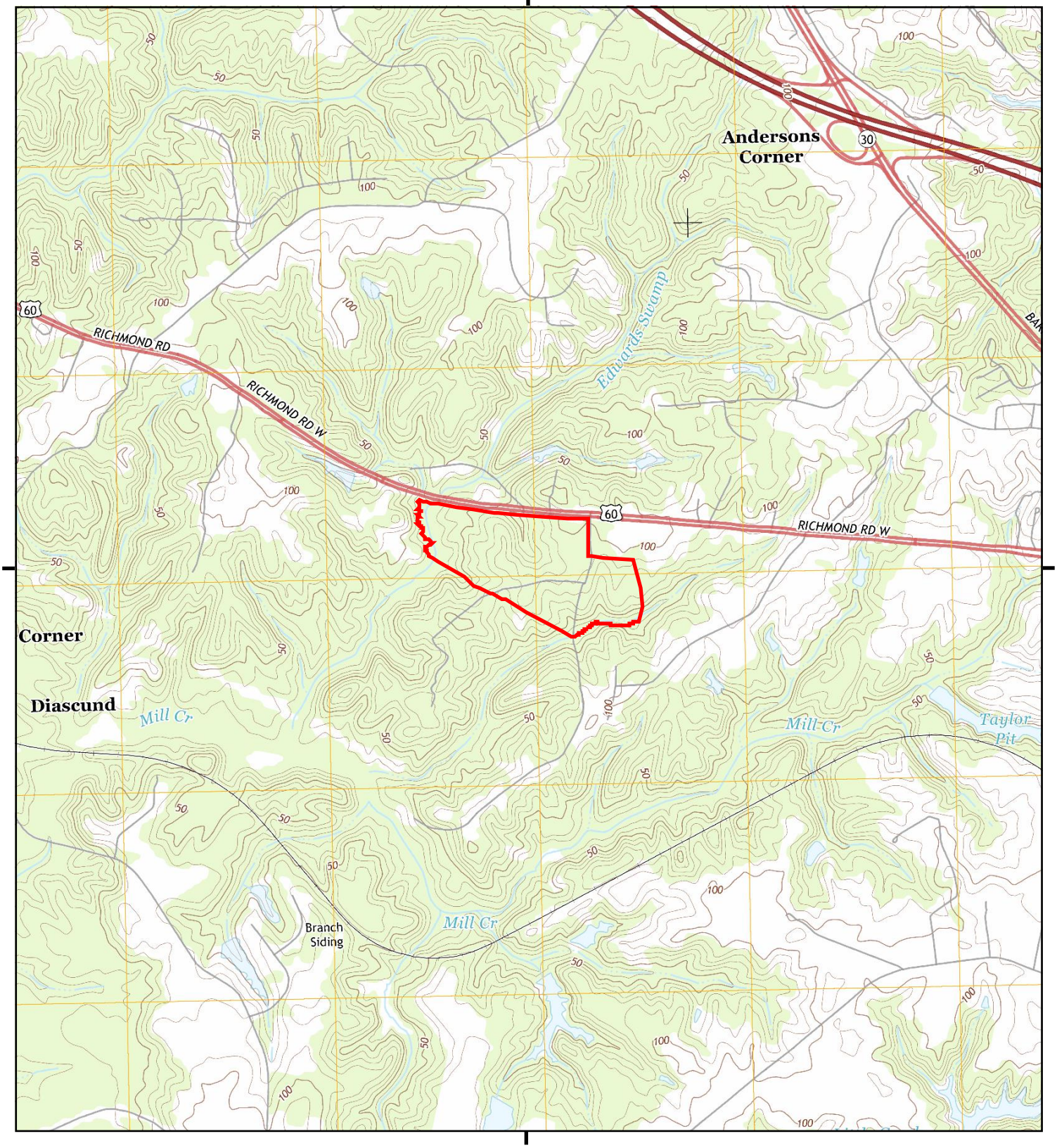
TP, Toano, 2016, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N

Historical Topo Map

2013



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W E
SW S SE

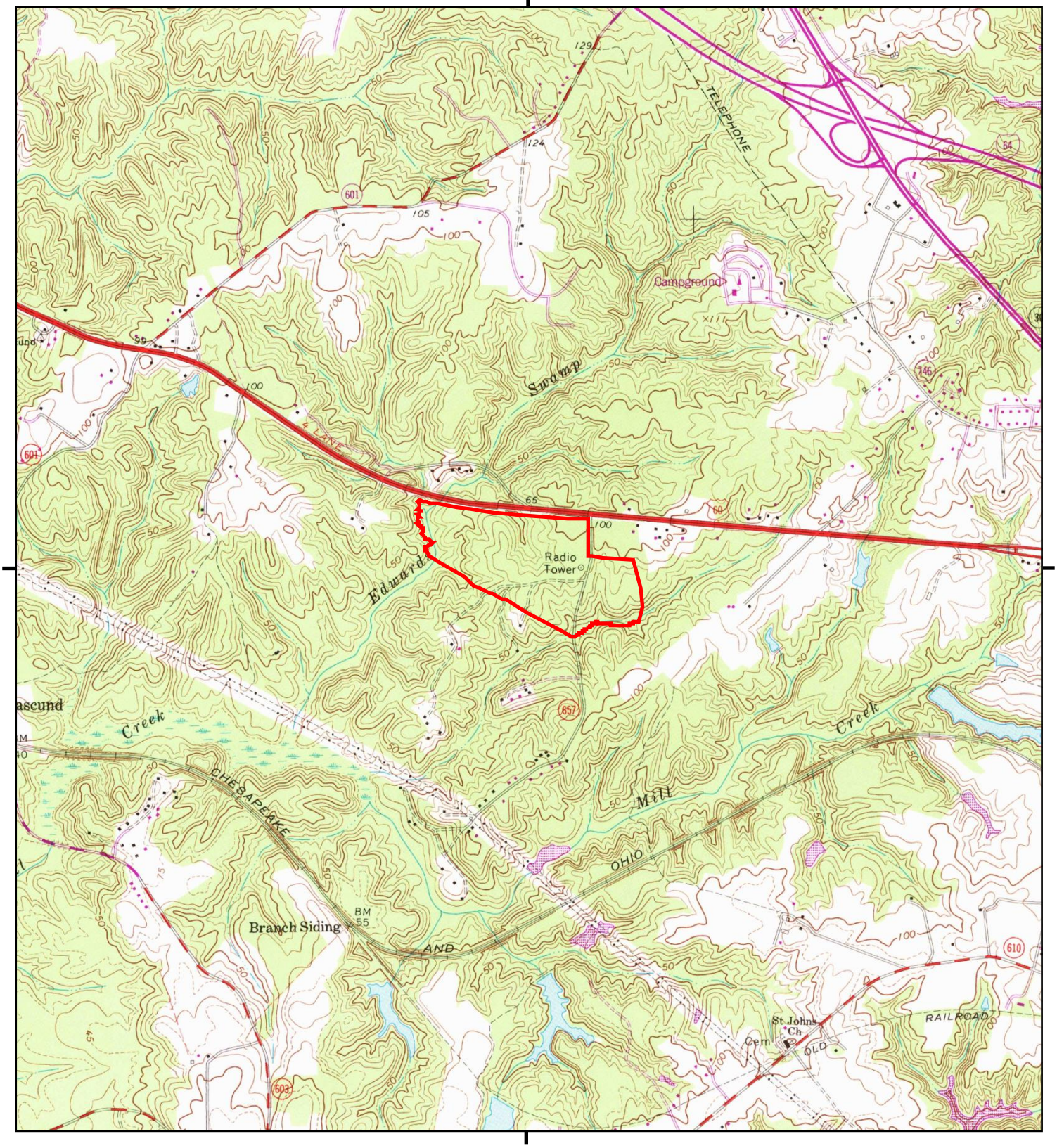
TP, Toano, 2013, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N

Historical Topo Map

1986



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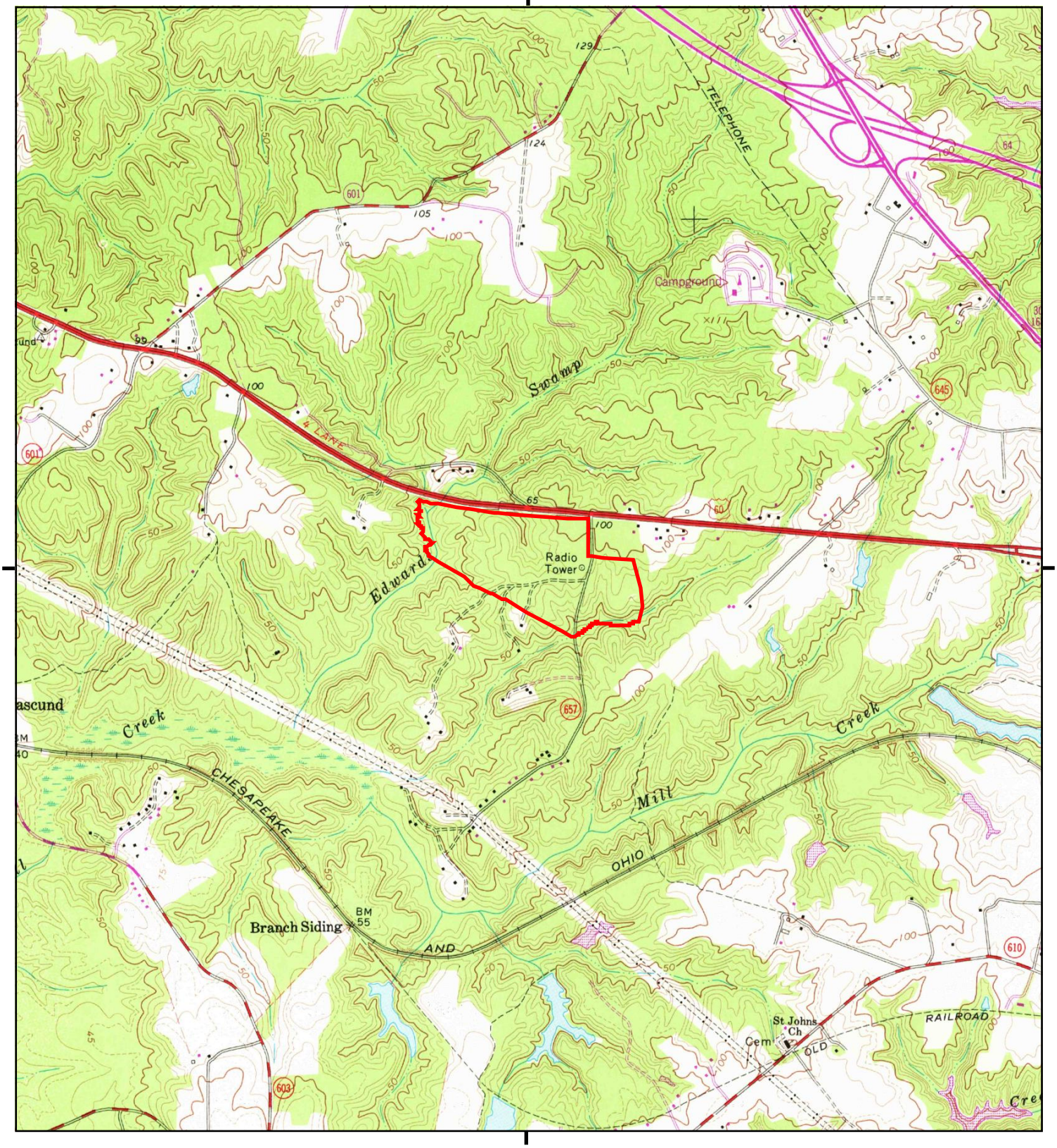
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Toano, 1986, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

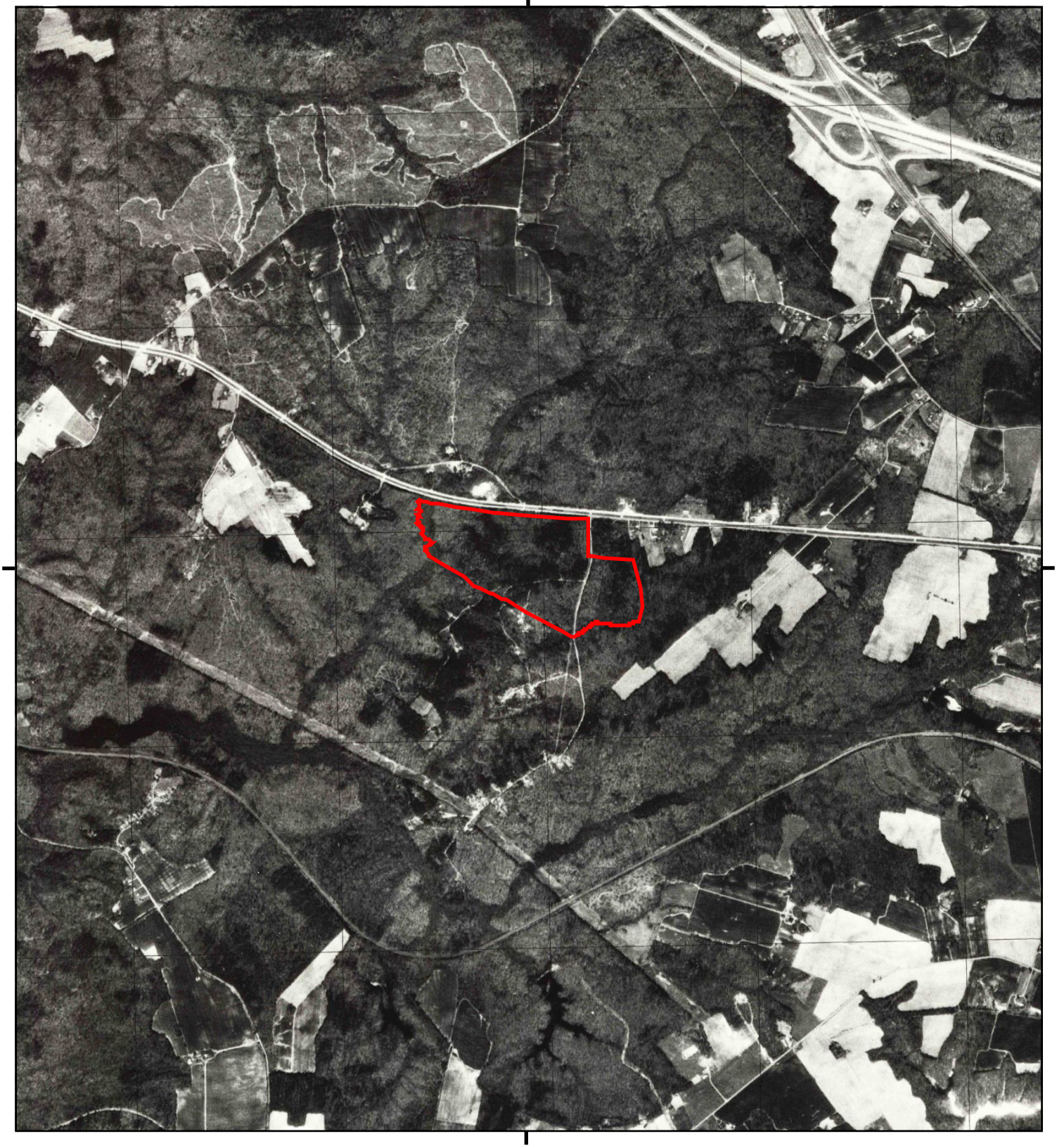
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Toano, 1979, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

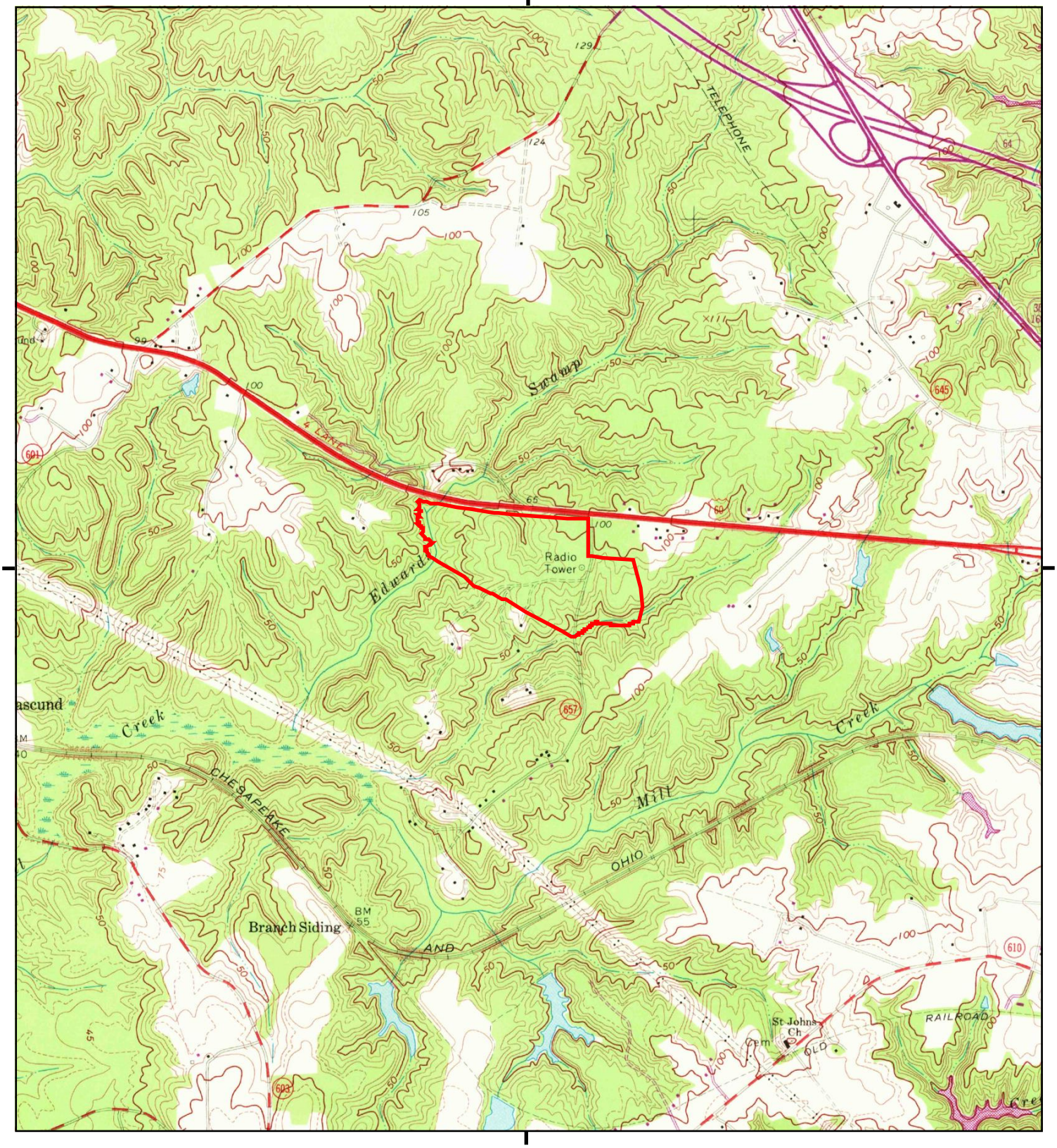
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Toano, 1973, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

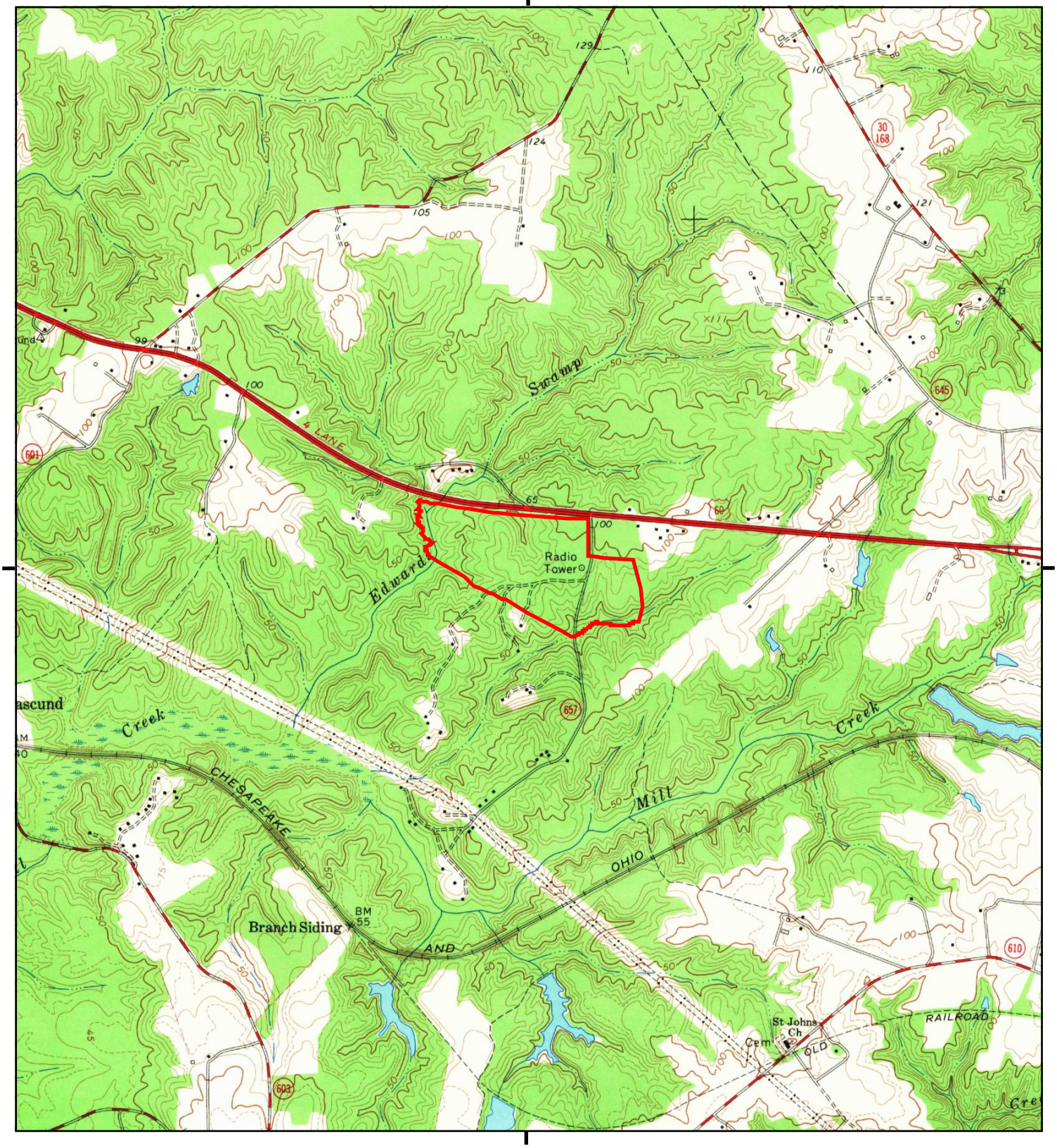
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Toano, 1972, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

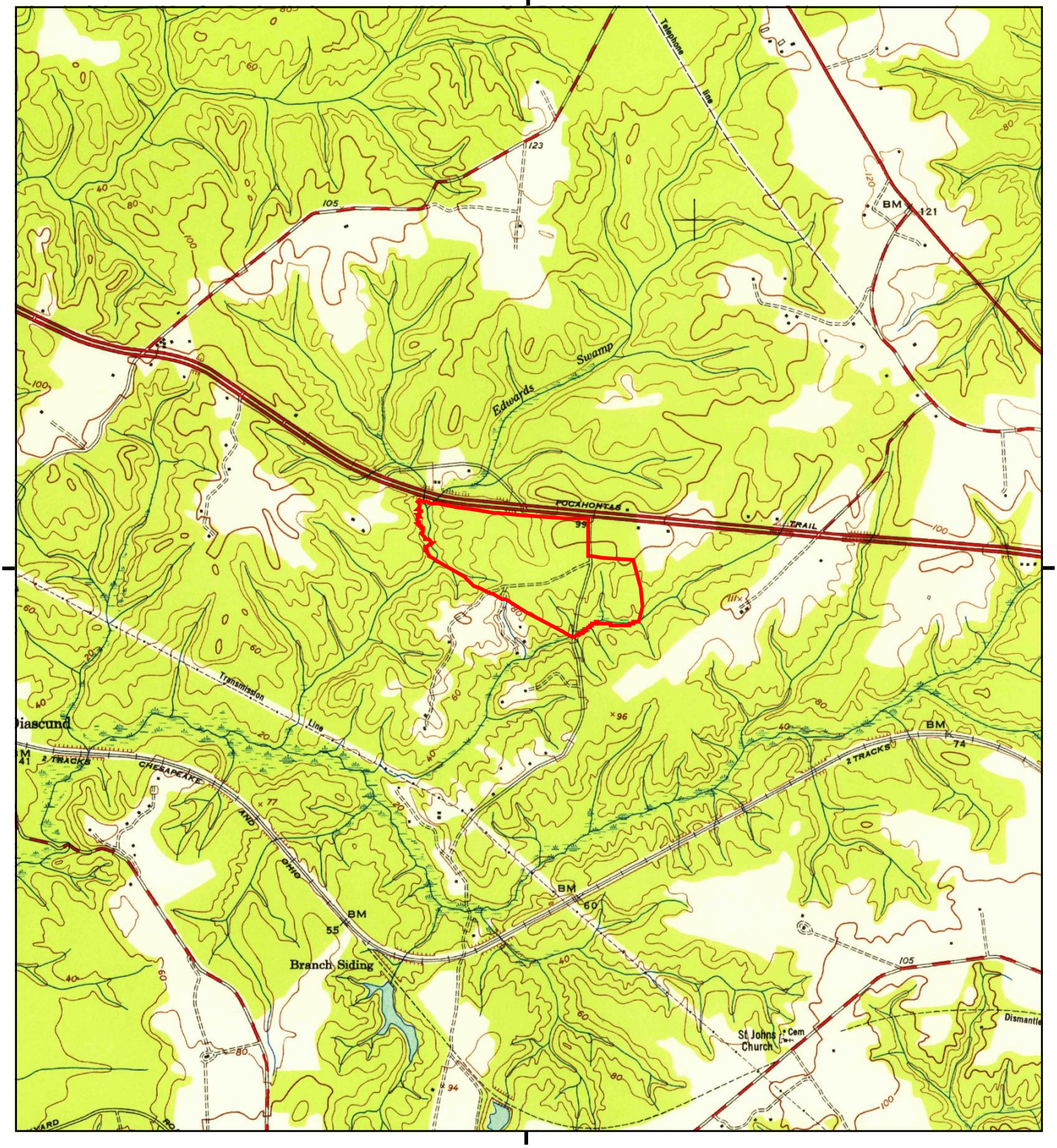
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Toano, 1965, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

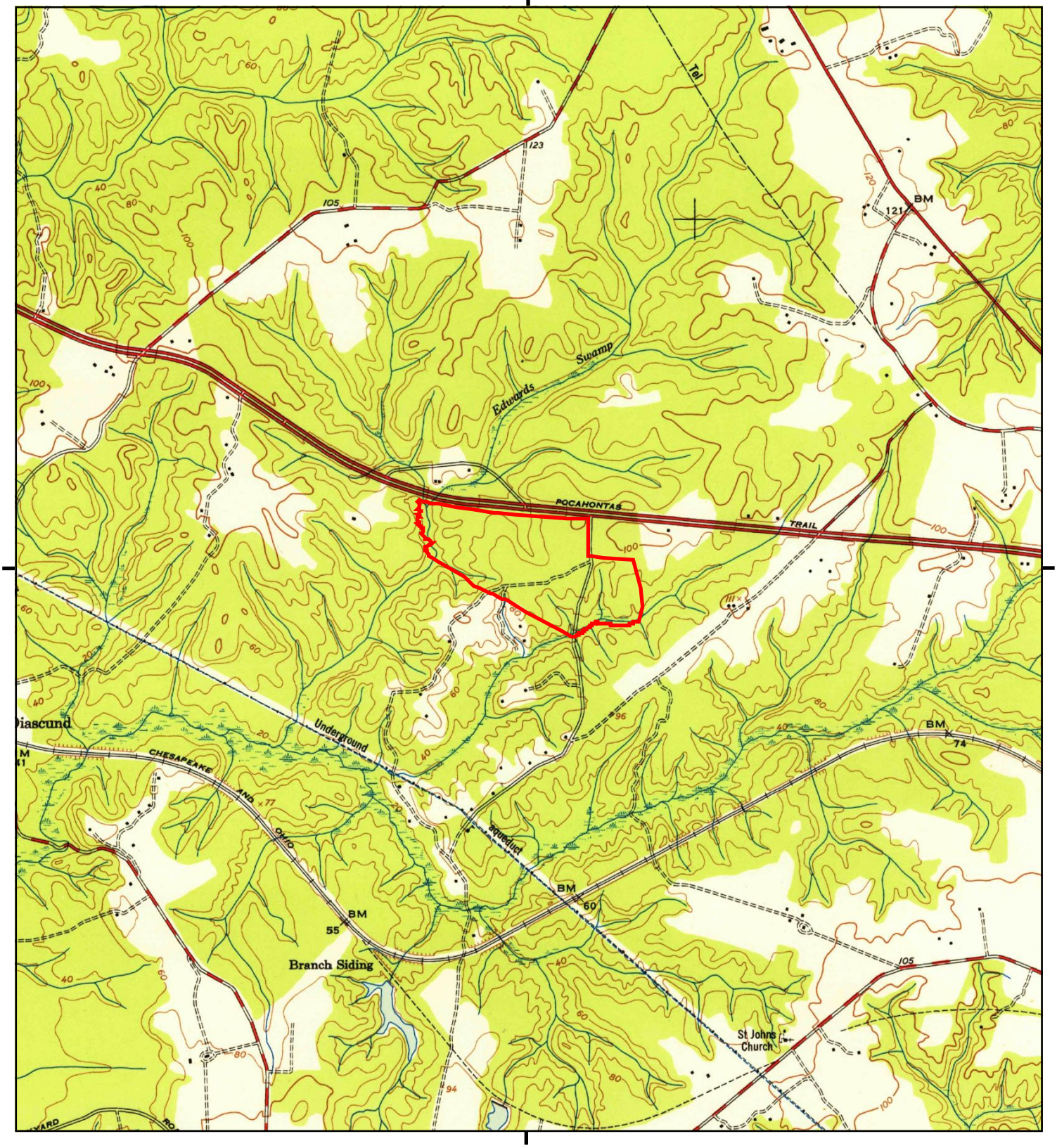
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Toano, 1958, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

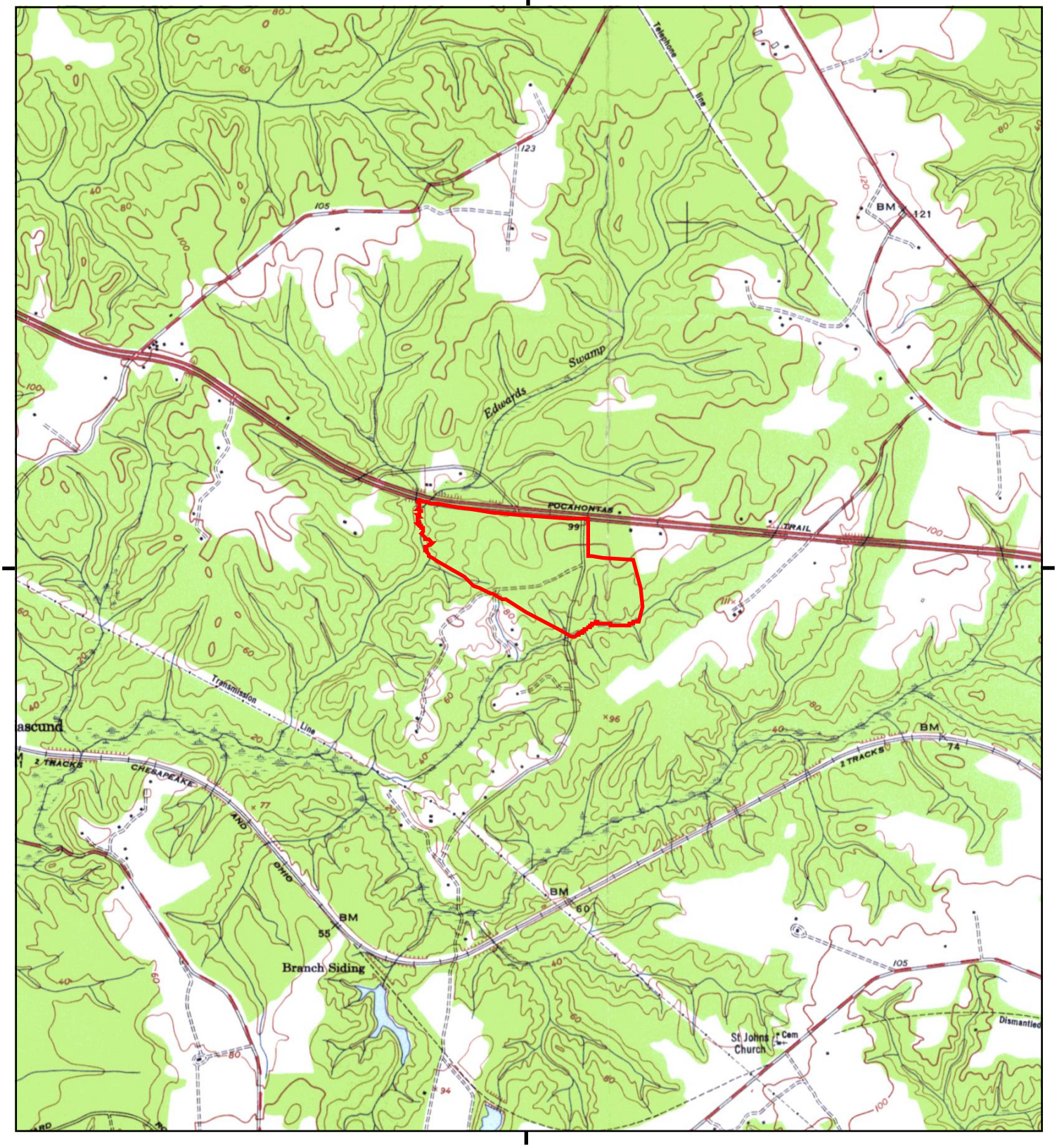
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Toano, 1953, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

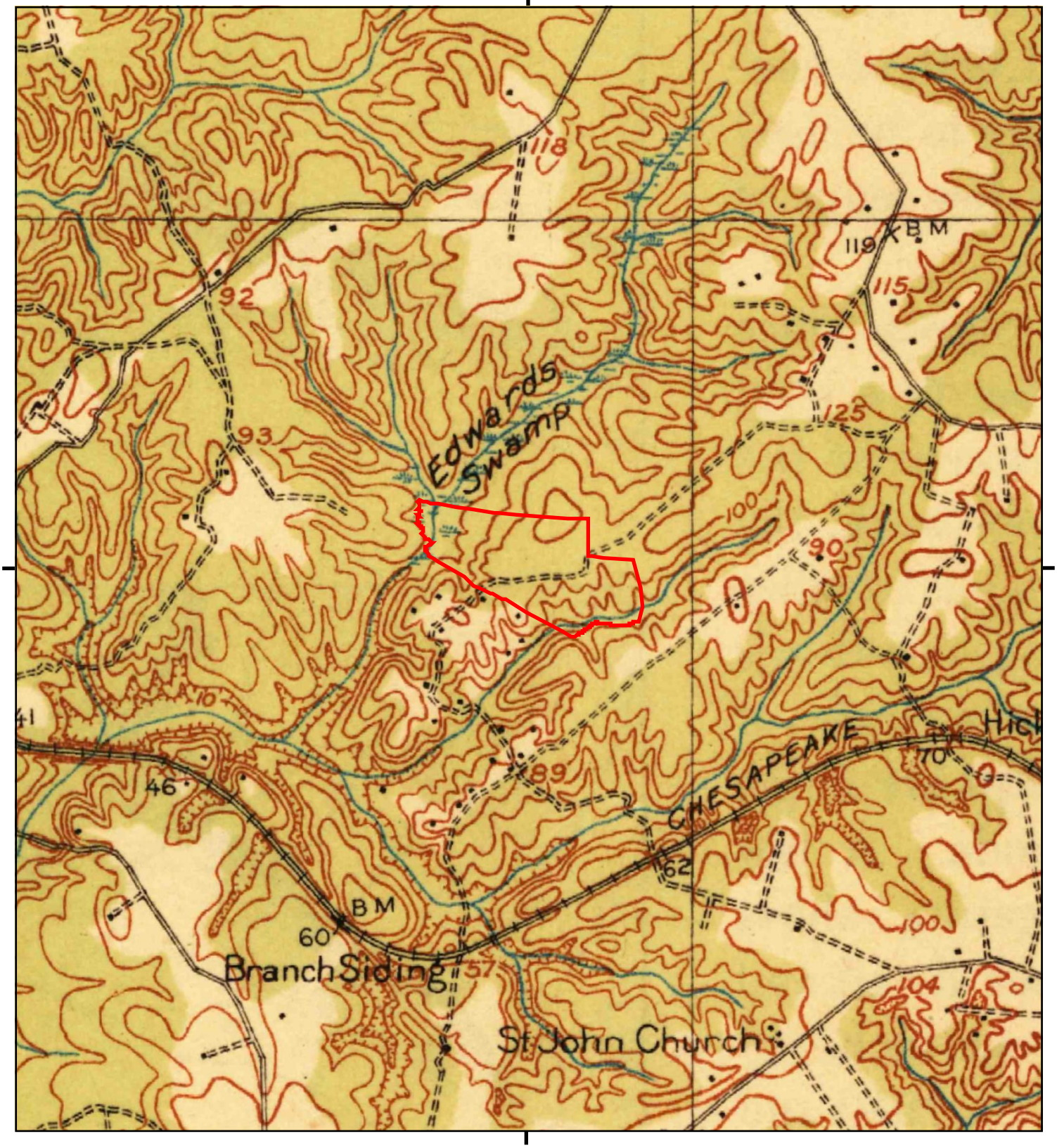
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, TOANO, 1952, 7.5-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

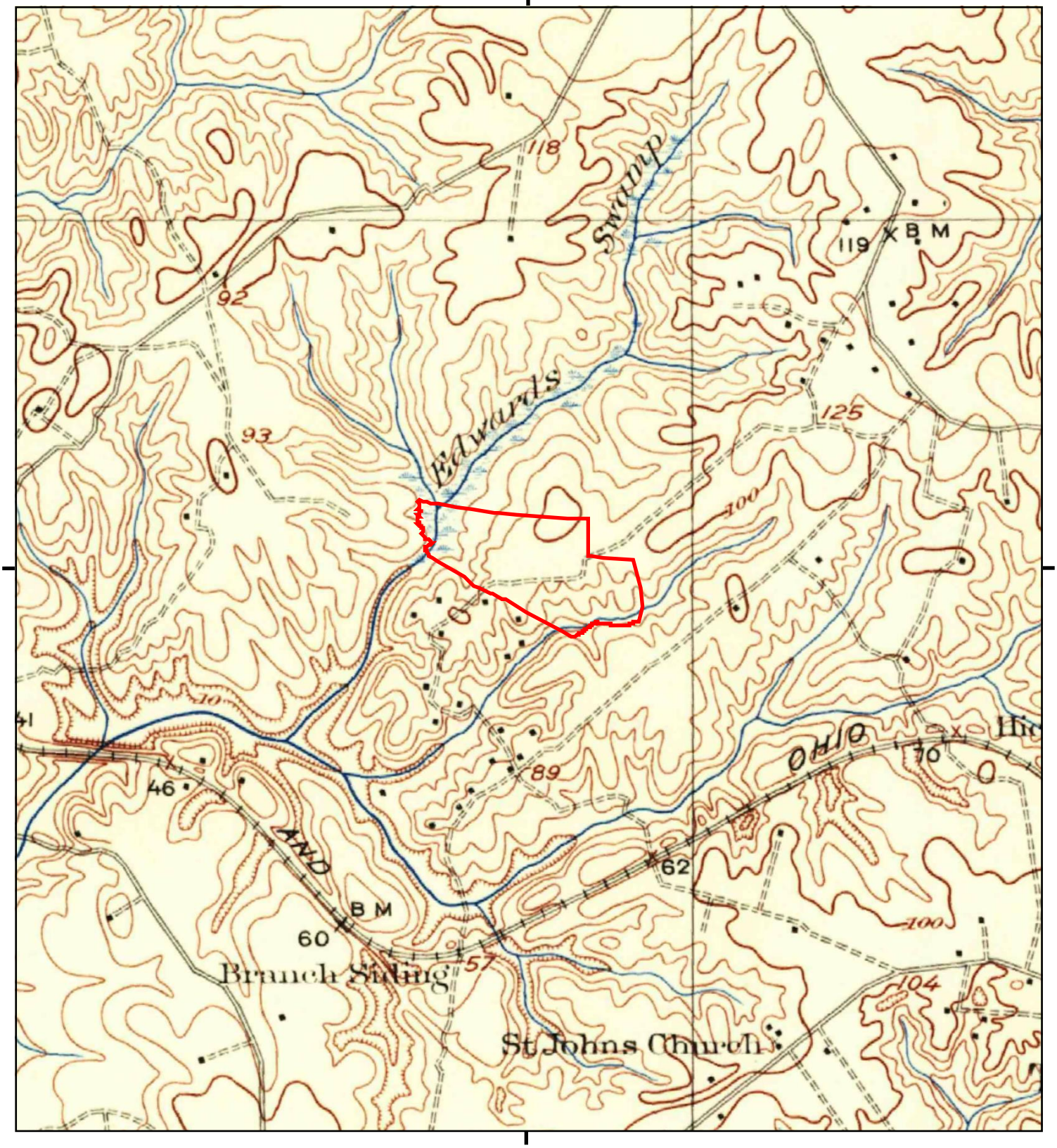
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Toano, 1918, 15-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Toano, 1917, 15-minute

SITE NAME: Hedera
ADDRESS: James City County
Toano, VA 23168
CLIENT: Kimley Horn & Associates

N

Hedera

James City County

Toano, VA 23168

Inquiry Number: 7657311.11

May 21, 2024

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

05/21/24

Site Name:

Hedera
James City County
Toano, VA 23168
EDR Inquiry # 7657311.11

Client Name:

Kimley Horn & Associates
4500 Main Street
Virginia Beach, VA 23462-0000
Contact: Trevor Celata

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2018	1"=625'	Flight Year: 2018	USDA/NAIP
2014	1"=625'	Flight Year: 2014	USDA/NAIP
2011	1"=625'	Flight Year: 2011	USDA/NAIP
2006	1"=625'	Flight Year: 2006	USDA/NAIP
2000	1"=625'	Flight Date: March 24, 2000	USGS
1994	1"=625'	Acquisition Date: March 12, 1994	USGS/DOQQ
1982	1"=625'	Flight Date: March 29, 1982	USDA
1973	1"=625'	Flight Date: April 01, 1973	USGS
1963	1"=625'	Flight Date: April 03, 1963	USGS

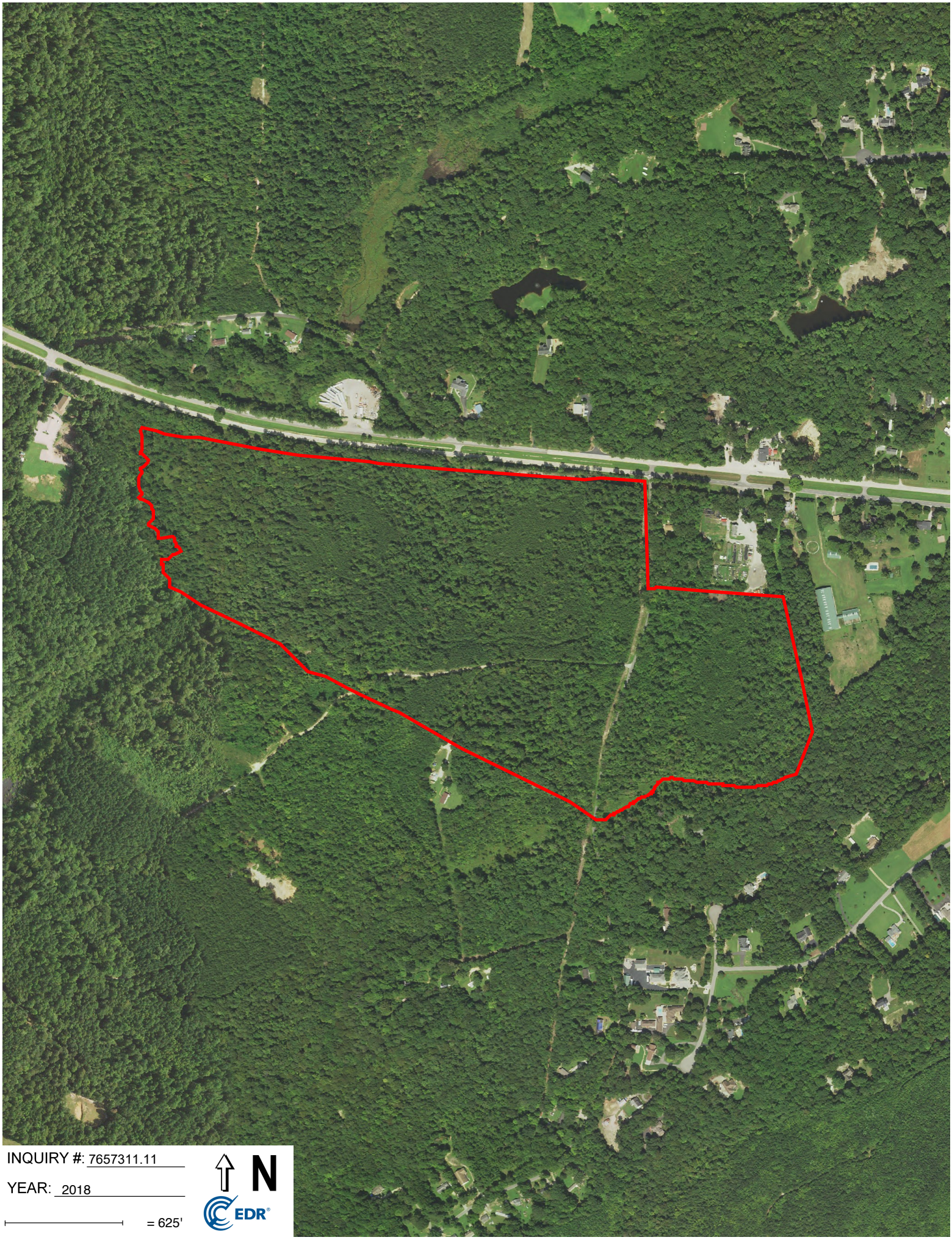
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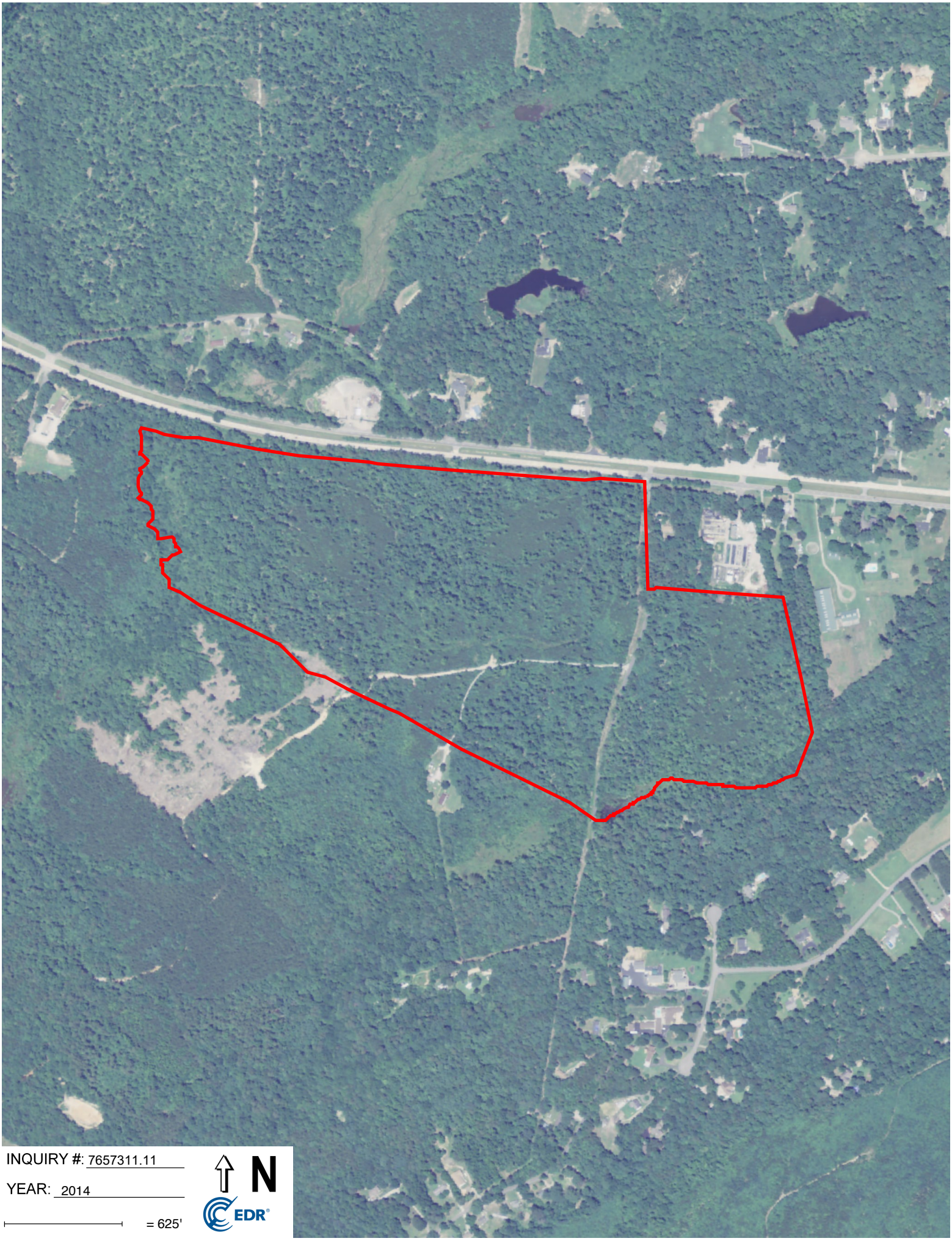
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INQUIRY #: 7657311.11
YEAR: 2018
= 625'
N
EDR



INQUIRY #: 7657311.11

YEAR: 2014

= 625'

N

EDR


INQUIRY #: 7657311.11
YEAR: 2011
= 625'
N
EDR


INQUIRY #: 7657311.11
YEAR: 2006
= 625'
N
EDR



INQUIRY #: 7657311.11

YEAR: 2000

= 625'

N

EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.


INQUIRY #: 7657311.11
YEAR: 1994
= 625'
N
EDR



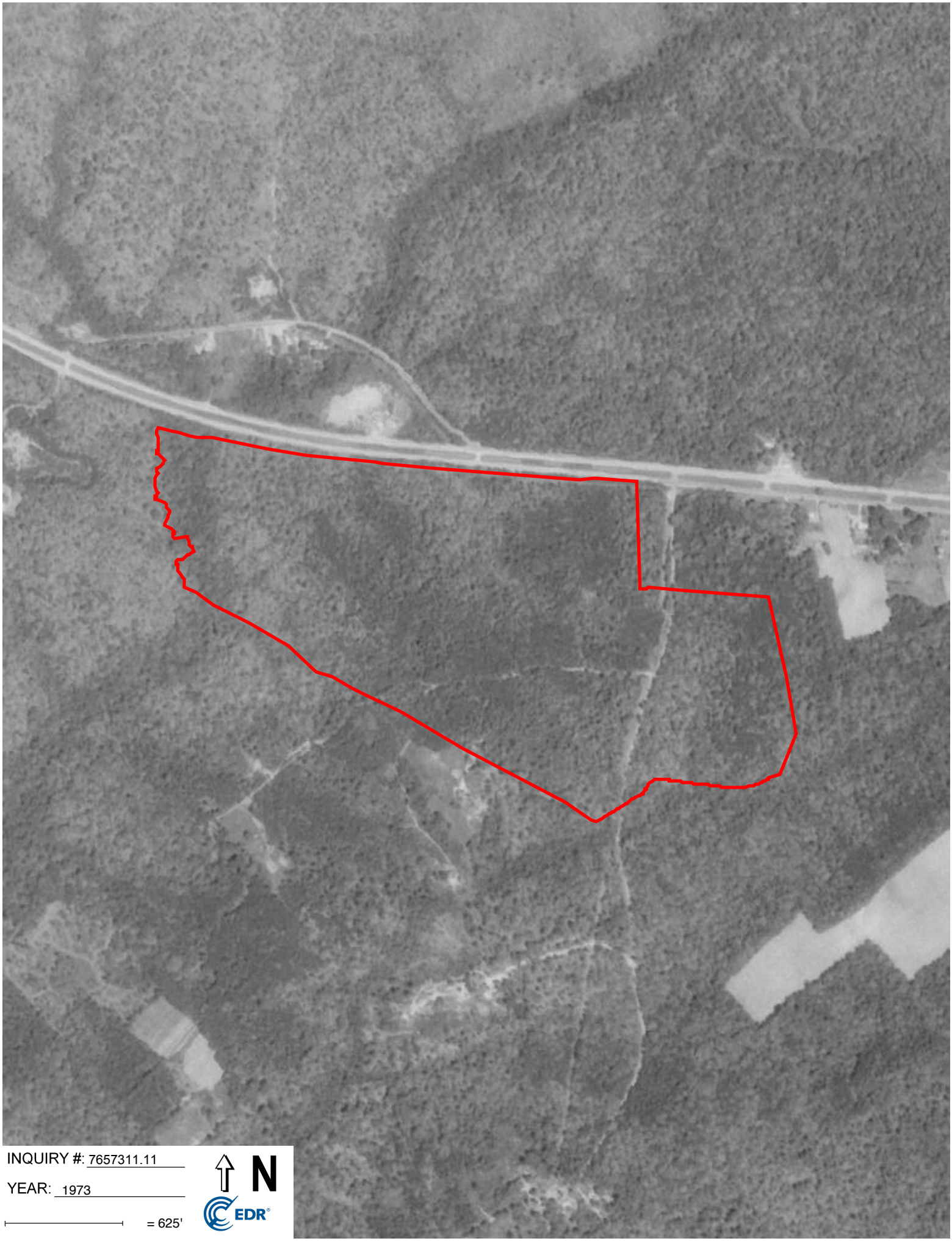
INQUIRY #: 7657311.11

YEAR: 1982

= 625'

N

EDR



INQUIRY #: 7657311.11

YEAR: 1973

= 625'

N

EDR



INQUIRY #: 7657311.11

YEAR: 1963

= 625'

N

EDR

HEDERA
JAMES CITY COUNTY
TOANO, VA 23168

Inquiry Number: 7657311.7S
MAY 23, 2024

EDR Environmental Lien and AUL Search

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Environmental Lien and AUL Search

The EDR Environmental Lien Search Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address and/or parcel information to:

- search for parcel information and/or legal description
- search for ownership information
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc
- search for publicly available environmental encumbering instrument(s) filed on or after the recording of the current deed; between the recording of the current deed and present
- provide a copy of any environmental encumbrance(s)
- provide a copy of the current deed when available

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

HEDERA
JAMES CITY COUNTY
TOANO, VA 23168

RESEARCH SOURCE

Source 1: JAMES CITY COUNTY RECORDER'S OFFICE

Source 2: VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Source 3: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Source 4: JUDICIAL RECORDS

PROPERTY INFORMATION

Legal Description:	PT COSBY
Current Owner:	LOUIS L SILVERMAN
	IVY HILL, LLC
Property Identifiers:	11-1-01-0-0013
	01516
Comments:	NA

Deed 1

Type of Deed:	TRANSFER ON DEATH DEED
Title is vested in:	LOUIS L SILVERMAN
Title received from:	BARBARA L SILVERMAN
Date Executed:	02/14/2022
Date Recorded:	02/14/2022
Book:	NA
Page:	NA
Volume:	NA
Instrument#:	202202335
Docket:	NA
Land Record Comments:	NA
Miscellaneous Comments:	NA

EDR Environmental Lien and AUL Search

Deed 2

Type of Deed:	DEED
Title is vested in:	IVY HILL, LLC
Title received from:	HANS FRANK
Date Executed:	02/09/2000
Date Recorded:	02/14/2000
Book:	NA
Page:	NA
Volume:	NA
Instrument#:	00000002879
Docket:	NA
Land Record Comments:	NA
Miscellaneous Comments:	NA

EDR Environmental Lien and AUL Search

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

Comments: NONE IDENTIFIED.

OTHER ACTIVITY AND USE LIMITATIONS (AULS)

Other AUL's: Found ☐ Not Found ☒

Comments: NONE IDENTIFIED.

EDR Environmental Lien and AUL Search

MISCELLANEOUS

Comments: NONE IDENTIFIED.

202202335

Parcel ID: 1110100013

LRSN: 1516

Prepared by / return to: Sarah E. Messersmith, Esq., VSB No. 71268, Kaufman & Canoles, P.C., 11815 Fountain Way, Suite 400, Newport News, VA 23606

Existence of Title Insurance Unknown

REVOCABLE TRANSFER ON DEATH DEED

This Revocable Transfer on Death Deed is exempt from recording taxes pursuant to §58.1-811(J) of the Code of Virginia.
This Revocable Transfer on Death Deed has been prepared without the benefit of a title examination.

REVOCABLE TRANSFER ON DEATH DEED

THIS REVOCABLE TRANSFER ON DEATH DEED, dated as of February 14, 2022, is made by **BARBARA L. SILVERMAN**, also known as **BARBARA SUE SILVERMAN**, index as a grantor, whose mailing address is 1002 Old Denbigh Boulevard, Apartment 307, Newport News, VA 23602.

This Revocable Transfer on Death Deed is made pursuant to the provisions of the Uniform Real Property Transfer on Death Act, Virginia Code § 64.2 – 621 et seq. In accordance with the provisions of the Uniform Real Property Transfer on Death Act, at my death, I transfer and convey my **one-fourth (1/4) interest** in the property commonly known as 101 Ivy Home Road, Toano, Virginia, and more particularly described below, to my designated beneficiaries as follows:

PRIMARY BENEFICIARY:

I designate my husband, **LOUIS S. SILVERMAN** [index as a grantee], as the designated beneficiary of the property, if he survives me.

ALTERNATE BENEFICIARIES:

If my primary designated beneficiary does not survive me, I designate my children, **RISA B. SILVERMAN** and **JASON SILVERMAN** [index as grantees], in equal shares, as tenants in common, as my alternate designated beneficiaries of the property, if they survive me.

PROPERTY:

The legal description of the real property that shall be transferred at my death pursuant to this Revocable Transfer on Death Deed is as follows:

> All that certain tract or parcel of land, situate, lying and being in Powhatan Magisterial District, James City County, Virginia, containing 100.18 Acres, as shown on a certain plat entitled, "PLAT OF SURVEY, A TRACT CONTAINING 100.18 ACRES, OWNED BY C.L. WOODWARD & W.F. WOODWARD", made by R.H. Highland, Certified Land Surveyor, dated July 27, 1964, a copy of which said plat is attached to a certain deed dated August 3, 1964, from C.L. Woodward, et ux, et als, to Hans Frank, et al, which deed is duly recorded in the Clerk's Office of the Circuit Court of James City County, Virginia, in Deed Book 97, page 30, said land being more particularly described as follows:
>
> Beginning at a point on the southerly side of U.S. Route 60 corner with the centerline of Route 657; thence along the centerline of Route 657 S 7° 37' W 237.0 feet; thence S 5° 43' W 334.15 feet to a point; thence S 83° 56' E 23.65 feet to a red oak on edge of road; thence S 77° 42' E 667.6 feet to an iron pipe; thence S 4° 23' E 601.4 feet to a fore and aft red oak; thence S 3° 03' W 162.3 feet to a sideline white oak; thence S 28° 27' W 221.0 feet to a point on stream; thence along stream the following traverses, S 77° 51' W 74.40 feet; N 84° 24' W 239.95 feet; S 87° 17 W 218.6 feet; N 54° 56' W 122.9 feet; S 89° 48' W 64.15 feet; S 55° 06' W 146.05 feet; S 64° 08' W 249.85 feet; the stream being the line to a culvert on the east side of Route 657; thence N 48° 00 W 203.8 feet to a fore and aft pine; thence N 57° 12' W 645.0 feet to a sideline white oak; thence N 52° 28' W 384.7 feet to a fore and aft gum; thence N 62° 29' W 290.2 feet to a large pine; thence N 55° 00' W 120.25 feet to a fore and aft white oak; thence N 64° 10' W 100.0 feet to a cedar stake; thence along a bottom N 42° 53' W 211.6 feet to a cedar stake; N 54° 47' W 218.65 feet to a cedar stake; thence N 17° 09' W 105.8 feet to a cedar stake; thence N 4°36' W 211.75 feet to a cedar stake; N 20°26' W 248.45 feet to a cedar stake; N 19° 13' W 77.15 feet to an ironwood on stream; thence following the stream as line N 18° 26" W 176.4 feet to a fore and aft poplar; N 27° 29' E 70.95 feet to a point; N 52° 41' E 277.9 feet to a point on culvert on the southern line of U.S. Route 60; thence along the southern line of U. S. Route 60 S 71°11' E 407.1 feet; S 74° 49' E 386.9 feet; S 77° 59' E 1708.9 feet to the center of Route 657, the point of beginning; but excluded therefrom 1.18 acres of land situated on the west side of Route 657, being that parcel shown on said

plat marked "Virginia State Police", and being more particularly described as follows: Beginning at a rod, which rod is situated on the west side of Route 657 S 18° 33' W 101.45 feet from the point third mentioned in the foregoing description; thence along the west side of Route 657 in a southerly direction 225.33 feet to a rod; thence N 68° 30' W 225.0 feet to a rod; thence N 21° 30' E 225.0 feet to a rod; thence S 68° 30' E 225.0 feet to a rod, the point of beginning.

Together with all and singular the buildings and improvements thereon, rights and privileges, tenements, hereditaments, easements and appurtenances belonging or in any way appertaining to said land.

Subject to, however, any and all covenants, restrictions, easements, rights-of-way, agreements and conditions of record or apparent on the ground affecting said property, which have not expired or have not otherwise become ineffective.

It being the same one-fourth (1/4) interest in the property conveyed to Barbara L. Silverman, also known as Barbara Sue Silverman, from Louis S. Silverman and Barbara L. Silverman, also known as Barbara Sue Silverman, by deed dated July 7, 2000 and recorded in the aforesaid Clerk's Office as Instrument Number 000013989.

RIGHT TO REVOKE AND METHOD TO REVOKE DEED:

Before my death, I have the right to revoke this deed.

Under the Uniform Real Property Transfer on Death Act, an instrument is effective to revoke a recorded transfer on death deed, or any part of it, only if the instrument:

1. Is one of the following:

   a. A transfer on death deed that revokes the transfer on death deed or part of the transfer on death deed expressly;

   b. A transfer on death deed that names a designated beneficiary that is inconsistent with the designated beneficiary in a prior transfer on death deed;

   c. An instrument of revocation that expressly revokes the transfer on death deed or part of the transfer on death deed; or

   d. An inter vivos deed that expressly revokes the transfer on death deed or part of the transfer on death deed.

2. Is acknowledged by the transferor after the acknowledgment of the transfer on death deed being revoked and recorded before the transferor's death in the land records of the clerk's office of the circuit court where the deed is recorded.

After this transfer on death deed is recorded, it can be revoked only by an effective revocatory instrument recorded prior to the death of the transferor and may not be revoked by a revocatory act taken against or on the original or a copy of the recorded transfer on death deed.

The execution and recordation of this transfer on death deed does not limit the effect of an *inter vivos* transfer of the property.

At my death, a beneficiary takes the property subject to all conveyances, encumbrances, assignments, contracts, mortgages, liens, and other interests to which the property is subject at my death.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK
SIGNATURE FOLLOWS

Witness the following signature and seal:

Barbara L. Silverman, also known as
Barbara Sue Silverman

COMMONWEALTH OF VIRGINIA
CITY OF NEWPORT NEWS, to wit:

The foregoing Transfer on Death Deed was acknowledged before me this 14th day of February, 2022, by Barbara L. Silverman, also known as Barbra Sue Silverman, ☐ who is personally known to me or ☒ who has produced satisfactory evidence of identity.

Notary Public

My Commission expires: 12/31/2025
[Affix Notarial Stamp]

SARAH E. MESSERSMITH
COMMONWEALTH
366643
OF VIRGINIA
NOTARY PUBLIC

20257578v1

INSTRUMENT 202202335
RECORDED IN THE CLERK'S OFFICE OF
WMSBG/JAMES CITY CIRCUIT ON
FEBRUARY 14, 2022 AT 01:40 PM
MONA A. FOLEY, CLERK
RECORDED BY: SPA

127630:dea:13929.003:2/8/00

000002879

Prepared by and return to:
John T. Tompkins, III, Esq.
Jones, Blechman, Woltz & Kelly, P.C.
P. O. Box 12888
Newport News, VA 23612-2888
Telephone: (757) 873-8073
Telefax: (757) 873-8103
Tax ID No. _____

THIS DEED IS EXEMPT FROM RECORDATION TAXES PURSUANT TO THE PROVISIONS OF SECTION 58.1-811-A(10) OF THE CODE OF VIRGINIA (1950) AS AMENDED

THIS DEED, made this Nine day of February, 2000, by and between **HANS FRANK**, **Grantor**, party of the first part, hereinafter referred to as "Grantor"; and **IVY HILL, L.L.C.**, a Virginia Limited Liability Company, Grantee, with a mailing address of 6413 Doral Drive, Baltimore, Maryland 21209, **Grantee**, party of the second part, hereinafter referred to as "Grantee."

WHEREAS, this conveyance is made in order to convey unto the Grantee herein the hereinafter described property, and in order to effectuate the terms of the aforesaid Limited Liability Corporation;

NOW, THEREFORE, WITNESSETH: That for and in consideration of the sum of ONE DOLLAR ($1.00) cash in hand paid, the receipt of which is hereby acknowledged, the Grantor herein does hereby grant and convey, with GENERAL WARRANTY OF TITLE unto the Ivy Hill, L.L.C.,all of his right, title, and interest in the following described property, to-wit:

FEB 14 03 01 12

JONES, BLECHMAN, WOLTZ & KELLY, P.C.
600 THIMBLE SHOALS BOULEVARD
POST OFFICE BOX 12888
NEWPORT NEWS, VA 23612-9888
(804) 873-8000

Parcel #(11-1)(1-13)

Parcel 1:
All that certain tract or parcel of land situate, lying and being in James City County, Virginia, containing 100.18 acres, as shown on a certain plat entitled, "Plat of Survey, A Tract Containing 100.18 Acres, Owned by C.L.

Woodward & W.F. Woodward," dated July 27, 1964, made by R.H. Highland, Certified Land Surveyor, a copy of which plat is attached to a certain deed dated August 3, 1964 from C.L. Woodward et ux, et als, to Hans Frank et als, which deed is duly of record in the Clerk's Office of the Circuit Court of James City County, Virginia, in Deed Book 97, page 30; excepting therefrom 1.18 acres of land situated on the west side of Route 657, as shown on the aforesaid plat as "Virginia State Police."

It being the same property conveyed to Hans Frank, Louis Morewitz, and Samuel Silverman by deed dated August 3, 1964 and recorded in the aforesaid Clerk's Office in Deed Book 97 at page 30, and subject to that certain Agreement dated August 10, 1964, and recorded in the aforesaid Clerk's Office in Deed Book 97 at page 126, and being the interest of Louis Morewitz conveyed to Hans Frank by Deed dated August 13, 1969, and recorded in Deed Book 123 at page 86, in the Clerk's office aforesaid.

Parcel # (11-1)(1-24)

Parcel 2:

All that certain tract or parcel of land located on the west side of State Secondary Route 657 just south of its intersection with State Primary Route 60, in James City County, as shown on a plat made by LaPrade Bros., Civil Engineers, Richmond, Virginia, dated April 4, 1956, entitled, "Commonwealth of Virginia State Police Division Map of 1.18 acres of land situated in James City County, Virginia," a copy of which plat is recorded in the Clerk's Office of the Circuit Court of James City County, Virginia, said parcel of land being more particularly described as follows:

Beginning at a new corner located in the west line of the 30-foot right of way of Route 657; thence with new lines: N 68° 30' W 225.0 feet to a new corner; N 21° 30' E 225.0 feet to a new corner; and S 68° 30' E 225.0 feet to a new corner located in said west line; thence with said west line and 15 feet from the center of Route 657; S 18° 03' W 62.25 feet to a point, and thence to the right with the arc of a 980.14 foot radius curve 163.08 feet to the beginning; and containing 1.18 acres, more or less.

Subject, however, to the easements and restrictions of record affecting said property.

FEB 14 00 0113

JONES, BLECHMAN, WOLTZ & KELLY, P.C.
600 Thimble Shoals Boulevard
Post Office Box 12888
Newport News, VA 23612-2888
(804) 873-8000

Together with all and singular buildings and improvements thereon, rights and privileges, tenements, hereditaments, easements and appurtenances unto the said land belonging or in anywise appertaining.

It being the same property conveyed to Hans Frank, Louis Morewitz, and Samuel Silverman by deed dated July 1, 1969, and recorded in the aforesaid Clerk's Office in Deed Book 122 at page 498, and being the undivided interest of Louis Morewitz conveyed to Hans Frank by Deed dated August 13, 1969, and recorded in Deed Book 123 at page 86, in the Clerk's office aforesaid.

WITNESS the following signature and seal:

Hans Frank (SEAL)
HANS FRANK

STATE OF MARYLAND

CITY OF BALTIMORE, to-wit:

9th The foregoing instrument was duly acknowledged before me this day of February, 2000, by **Hans Frank**.

Melonie L. Hagan
Notary Public

My commission expires: 03/01/2002.

FEB 14 00 0114

VIRGINIA: City of Williamsburg and County of James City, to-wit:
This Deed **was presented with certificate annexed and admitted to record on** 14 February, 2000, **at** 11:02 **AM. in the Clerk's Office of the Circuit Court of the City of Williamsburg and County of James City.**
TESTE: BETSY B. WOOLRIDGE, CLERK
BY: Betsy B. Woolridge **Deputy Clerk**

JONES, BLECHMAN, WOLTZ & KELLY, P.C.
600 THIMBLE SHOALS BOULEVARD
POST OFFICE BOX 12888
NEWPORT NEWS, VA 23612-2888
(804) 873-8000

HEDERA
JAMES CITY COUNTY
TOANO, VA 23168

Inquiry Number: 7657311.7S
MAY 23, 2024

EDR Environmental Lien and AUL Search

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Environmental Lien and AUL Search

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A network of professional, trained researchers, following established procedures, uses client supplied address and/or parcel information to:

- search for parcel information and/or legal description
- search for ownership information
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc
- search for publicly available environmental encumbering instrument(s) filed on or after the recording of the current deed; between the recording of the current deed and present
- provide a copy of any environmental encumbrance(s)
- provide a copy of the current deed when available

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

HEDERA
JAMES CITY COUNTY
TOANO, VA 23168

RESEARCH SOURCE

Source 1: JAMES CITY COUNTY RECORDER'S OFFICE

Source 2: VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Source 3: UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

Source 4: JUDICIAL RECORDS

PROPERTY INFORMATION

Legal Description:	1 18 AC W LINE OF 3
Current Owner:	LOUIS S SILVERMAN
	IVY HILL, LLC
Property Identifiers:	11-1-01-0-0024
	01517
Comments:	NA

Deed 1

Type of Deed:	TRANSFER ON DEATH DEED
Title is vested in:	LOUIS S SILVERMAN
Title received from:	BARBARA L SILVERMAN
Date Executed:	02/14/2022
Date Recorded:	02/14/2022
Book:	NA
Page:	NA
Volume:	NA
Instrument#:	202202335
Docket:	NA
Land Record Comments:	NA
Miscellaneous Comments:	NA

EDR Environmental Lien and AUL Search

Deed 2

Type of Deed:	DEED
Title is vested in:	IVY HILL, LLC
Title received from:	HANS FRANK
Date Executed:	02/04/2000
Date Recorded:	02/14/2000
Book:	NA
Page:	NA
Volume:	NA
Instrument#:	000002879
Docket:	NA
Land Record Comments:	NA
Miscellaneous Comments:	NA

EDR Environmental Lien and AUL Search

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

Comments: NONE IDENTIFIED.

OTHER ACTIVITY AND USE LIMITATIONS (AULS)

Other AUL's: Found ☐ Not Found ☒

Comments: NONE IDENTIFIED.

EDR Environmental Lien and AUL Search

MISCELLANEOUS

Comments: NONE IDENTIFIED.

202202335

Parcel ID: 1110100013

LRSN: 1516

Prepared by / return to: Sarah E. Messersmith, Esq., VSB No. 71268, Kaufman & Canoles, P.C., 11815 Fountain Way, Suite 400, Newport News, VA 23606

Existence of Title Insurance Unknown

REVOCABLE TRANSFER ON DEATH DEED

This Revocable Transfer on Death Deed is exempt from recording taxes pursuant to §58.1-811(J) of the Code of Virginia.
This Revocable Transfer on Death Deed has been prepared without the benefit of a title examination.

REVOCABLE TRANSFER ON DEATH DEED

THIS REVOCABLE TRANSFER ON DEATH DEED, dated as of February 14, 2022, is made by **BARBARA L. SILVERMAN**, also known as **BARBARA SUE SILVERMAN**, index as a grantor, whose mailing address is 1002 Old Denbigh Boulevard, Apartment 307, Newport News, VA 23602.

This Revocable Transfer on Death Deed is made pursuant to the provisions of the Uniform Real Property Transfer on Death Act, Virginia Code § 64.2 – 621 et seq. In accordance with the provisions of the Uniform Real Property Transfer on Death Act, at my death, I transfer and convey my **one-fourth (1/4) interest** in the property commonly known as 101 Ivy Home Road, Toano, Virginia, and more particularly described below, to my designated beneficiaries as follows:

PRIMARY BENEFICIARY:

I designate my husband, **LOUIS S. SILVERMAN** [index as a grantee], as the designated beneficiary of the property, if he survives me.

ALTERNATE BENEFICIARIES:

If my primary designated beneficiary does not survive me, I designate my children, **RISA B. SILVERMAN** and **JASON SILVERMAN** [index as grantees], in equal shares, as tenants in common, as my alternate designated beneficiaries of the property, if they survive me.

PROPERTY:

The legal description of the real property that shall be transferred at my death pursuant to this Revocable Transfer on Death Deed is as follows:

> All that certain tract or parcel of land, situate, lying and being in Powhatan Magisterial District, James City County, Virginia, containing 100.18 Acres, as shown on a certain plat entitled, "PLAT OF SURVEY, A TRACT CONTAINING 100.18 ACRES, OWNED BY C.L. WOODWARD & W.F. WOODWARD", made by R.H. Highland, Certified Land Surveyor, dated July 27, 1964, a copy of which said plat is attached to a certain deed dated August 3, 1964, from C.L. Woodward, et ux, et als, to Hans Frank, et al, which deed is duly recorded in the Clerk's Office of the Circuit Court of James City County, Virginia, in Deed Book 97, page 30, said land being more particularly described as follows:
>
> Beginning at a point on the southerly side of U.S. Route 60 corner with the centerline of Route 657; thence along the centerline of Route 657 S 7° 37' W 237.0 feet; thence S 5° 43' W 334.15 feet to a point; thence S 83° 56' E 23.65 feet to a red oak on edge of road; thence S 77° 42' E 667.6 feet to an iron pipe; thence S 4° 23' E 601.4 feet to a fore and aft red oak; thence S 3° 03' W 162.3 feet to a sideline white oak; thence S 28° 27' W 221.0 feet to a point on stream; thence along stream the following traverses, S 77° 51' W 74.40 feet; N 84° 24' W 239.95 feet; S 87° 17 W 218.6 feet; N 54° 56' W 122.9 feet; S 89° 48' W 64.15 feet; S 55° 06' W 146.05 feet; S 64° 08' W 249.85 feet; the stream being the line to a culvert on the east side of Route 657; thence N 48° 00 W 203.8 feet to a fore and aft pine; thence N 57° 12' W 645.0 feet to a sideline white oak; thence N 52° 28' W 384.7 feet to a fore and aft gum; thence N 62° 29' W 290.2 feet to a large pine; thence N 55° 00' W 120.25 feet to a fore and aft white oak; thence N 64° 10' W 100.0 feet to a cedar stake; thence along a bottom N 42° 53' W 211.6 feet to a cedar stake; N 54° 47' W 218.65 feet to a cedar stake; thence N 17° 09' W 105.8 feet to a cedar stake; thence N 4°36' W 211.75 feet to a cedar stake; N 20°26' W 248.45 feet to a cedar stake; N 19° 13' W 77.15 feet to an ironwood on stream; thence following the stream as line N 18° 26" W 176.4 feet to a fore and aft poplar; N 27° 29' E 70.95 feet to a point; N 52° 41' E 277.9 feet to a point on culvert on the southern line of U.S. Route 60; thence along the southern line of U. S. Route 60 S 71°11' E 407.1 feet; S 74° 49' E 386.9 feet; S 77° 59' E 1708.9 feet to the center of Route 657, the point of beginning; but excluded therefrom 1.18 acres of land situated on the west side of Route 657, being that parcel shown on said

plat marked "Virginia State Police", and being more particularly described as follows: Beginning at a rod, which rod is situated on the west side of Route 657 S 18° 33' W 101.45 feet from the point third mentioned in the foregoing description; thence along the west side of Route 657 in a southerly direction 225.33 feet to a rod; thence N 68° 30' W 225.0 feet to a rod; thence N 21° 30' E 225.0 feet to a rod; thence S 68° 30' E 225.0 feet to a rod, the point of beginning.

Together with all and singular the buildings and improvements thereon, rights and privileges, tenements, hereditaments, easements and appurtenances belonging or in any way appertaining to said land.

Subject to, however, any and all covenants, restrictions, easements, rights-of-way, agreements and conditions of record or apparent on the ground affecting said property, which have not expired or have not otherwise become ineffective.

It being the same one-fourth (1/4) interest in the property conveyed to Barbara L. Silverman, also known as Barbara Sue Silverman, from Louis S. Silverman and Barbara L. Silverman, also known as Barbara Sue Silverman, by deed dated July 7, 2000 and recorded in the aforesaid Clerk's Office as Instrument Number 000013989.

RIGHT TO REVOKE AND METHOD TO REVOKE DEED:

Before my death, I have the right to revoke this deed.

Under the Uniform Real Property Transfer on Death Act, an instrument is effective to revoke a recorded transfer on death deed, or any part of it, only if the instrument:

1. Is one of the following:

   a. A transfer on death deed that revokes the transfer on death deed or part of the transfer on death deed expressly;

   b. A transfer on death deed that names a designated beneficiary that is inconsistent with the designated beneficiary in a prior transfer on death deed;

   c. An instrument of revocation that expressly revokes the transfer on death deed or part of the transfer on death deed; or

   d. An inter vivos deed that expressly revokes the transfer on death deed or part of the transfer on death deed.

2. Is acknowledged by the transferor after the acknowledgment of the transfer on death deed being revoked and recorded before the transferor's death in the land records of the clerk's office of the circuit court where the deed is recorded.

After this transfer on death deed is recorded, it can be revoked only by an effective revocatory instrument recorded prior to the death of the transferor and may not be revoked by a revocatory act taken against or on the original or a copy of the recorded transfer on death deed.

The execution and recordation of this transfer on death deed does not limit the effect of an *inter vivos* transfer of the property.

At my death, a beneficiary takes the property subject to all conveyances, encumbrances, assignments, contracts, mortgages, liens, and other interests to which the property is subject at my death.

REMAINDER OF PAGE INTENTIONALLY LEFT BLANK
SIGNATURE FOLLOWS

Witness the following signature and seal:

Barbara L. Silverman, also known as
Barbara Sue Silverman

COMMONWEALTH OF VIRGINIA
CITY OF NEWPORT NEWS, to wit:

The foregoing Transfer on Death Deed was acknowledged before me this 14th day of February, 2022, by Barbara L. Silverman, also known as Barbra Sue Silverman, ☐ who is personally known to me or ☒ who has produced satisfactory evidence of identity.

Notary Public

My Commission expires: 12/31/2025
[Affix Notarial Stamp]

SARAH E. MESSERSMITH
COMMONWEALTH
366643
OF VIRGINIA
NOTARY PUBLIC

20257578v1

INSTRUMENT 202202335
RECORDED IN THE CLERK'S OFFICE OF
WMSBG/JAMES CITY CIRCUIT ON
FEBRUARY 14, 2022 AT 01:40 PM
MONA A. FOLEY, CLERK
RECORDED BY: SPA

127630:dea:13929.003:2/8/00

000002879

Prepared by and return to:
John T. Tompkins, III, Esq.
Jones, Blechman, Woltz & Kelly, P.C.
P. O. Box 12888
Newport News, VA 23612-2888
Telephone: (757) 873-8073
Telefax: (757) 873-8103
Tax ID No. _____

THIS DEED IS EXEMPT FROM RECORDATION TAXES PURSUANT TO THE PROVISIONS OF SECTION 58.1-811-A(10) OF THE CODE OF VIRGINIA (1950) AS AMENDED

THIS DEED, made this Nine day of February, 2000, by and between **HANS FRANK**, **Grantor**, party of the first part, hereinafter referred to as "Grantor"; and **IVY HILL, L.L.C.**, a Virginia Limited Liability Company, Grantee, with a mailing address of 6413 Doral Drive, Baltimore, Maryland 21209, **Grantee**, party of the second part, hereinafter referred to as "Grantee."

WHEREAS, this conveyance is made in order to convey unto the Grantee herein the hereinafter described property, and in order to effectuate the terms of the aforesaid Limited Liability Corporation;

NOW, THEREFORE, WITNESSETH: That for and in consideration of the sum of ONE DOLLAR ($1.00) cash in hand paid, the receipt of which is hereby acknowledged, the Grantor herein does hereby grant and convey, with GENERAL WARRANTY OF TITLE unto the Ivy Hill, L.L.C.,all of his right, title, and interest in the following described property, to-wit:

FEB 14 03 01 12

JONES, BLECHMAN, WOLTZ & KELLY, P.C.
600 THIMBLE SHOALS BOULEVARD
POST OFFICE BOX 12888
NEWPORT NEWS, VA 23612-9888
(804) 873-8000

Parcel #(11-1)(1-13)

Parcel 1:
All that certain tract or parcel of land situate, lying and being in James City County, Virginia, containing 100.18 acres, as shown on a certain plat entitled, "Plat of Survey, A Tract Containing 100.18 Acres, Owned by C.L.

Woodward & W.F. Woodward," dated July 27, 1964, made by R.H. Highland, Certified Land Surveyor, a copy of which plat is attached to a certain deed dated August 3, 1964 from C.L. Woodward et ux, et als, to Hans Frank et als, which deed is duly of record in the Clerk's Office of the Circuit Court of James City County, Virginia, in Deed Book 97, page 30; excepting therefrom 1.18 acres of land situated on the west side of Route 657, as shown on the aforesaid plat as "Virginia State Police."

It being the same property conveyed to Hans Frank, Louis Morewitz, and Samuel Silverman by deed dated August 3, 1964 and recorded in the aforesaid Clerk's Office in Deed Book 97 at page 30, and subject to that certain Agreement dated August 10, 1964, and recorded in the aforesaid Clerk's Office in Deed Book 97 at page 126, and being the interest of Louis Morewitz conveyed to Hans Frank by Deed dated August 13, 1969, and recorded in Deed Book 123 at page 86, in the Clerk's office aforesaid.

Parcel # (11-1)(1-24)

Parcel 2:

All that certain tract or parcel of land located on the west side of State Secondary Route 657 just south of its intersection with State Primary Route 60, in James City County, as shown on a plat made by LaPrade Bros., Civil Engineers, Richmond, Virginia, dated April 4, 1956, entitled, "Commonwealth of Virginia State Police Division Map of 1.18 acres of land situated in James City County, Virginia," a copy of which plat is recorded in the Clerk's Office of the Circuit Court of James City County, Virginia, said parcel of land being more particularly described as follows:

Beginning at a new corner located in the west line of the 30-foot right of way of Route 657; thence with new lines: N 68° 30' W 225.0 feet to a new corner; N 21° 30' E 225.0 feet to a new corner; and S 68° 30' E 225.0 feet to a new corner located in said west line; thence with said west line and 15 feet from the center of Route 657; S 18° 03' W 62.25 feet to a point, and thence to the right with the arc of a 980.14 foot radius curve 163.08 feet to the beginning; and containing 1.18 acres, more or less.

Subject, however, to the easements and restrictions of record affecting said property.

FEB 14 00 0113

JONES, BLECHMAN, WOLTZ & KELLY, P.C.
600 Thimble Shoals Boulevard
Post Office Box 12888
Newport News, VA 23612-2888
(804) 873-8000

Together with all and singular buildings and improvements thereon, rights and privileges, tenements, hereditaments, easements and appurtenances unto the said land belonging or in anywise appertaining.

It being the same property conveyed to Hans Frank, Louis Morewitz, and Samuel Silverman by deed dated July 1, 1969, and recorded in the aforesaid Clerk's Office in Deed Book 122 at page 498, and being the undivided interest of Louis Morewitz conveyed to Hans Frank by Deed dated August 13, 1969, and recorded in Deed Book 123 at page 86, in the Clerk's office aforesaid.

WITNESS the following signature and seal:

Hans Frank (SEAL)
HANS FRANK

STATE OF MARYLAND

CITY OF BALTIMORE, to-wit:

9th The foregoing instrument was duly acknowledged before me this day of February, 2000, by **Hans Frank**.

Melonie L. Hagan
Notary Public

My commission expires: 03/01/2002.

FEB 14 00 0114

VIRGINIA: City of Williamsburg and County of James City, to-wit:
This Deed **was presented with certificate annexed and admitted to record on** 14 February, 2000, **at** 11:02 **AM. in the Clerk's Office of the Circuit Court of the City of Williamsburg and County of James City.**
TESTE: BETSY B. WOOLRIDGE, CLERK
BY: Betsy B. Woolridge **Deputy Clerk**

JONES, BLECHMAN, WOLTZ & KELLY, P.C.
600 THIMBLE SHOALS BOULEVARD
POST OFFICE BOX 12888
NEWPORT NEWS, VA 23612-2888
(804) 873-8000

Hedera
James City County
Toano, VA 23168

Inquiry Number: 7657311.8
May 20, 2024

EDR Building Permit Report

Target Property and Adjoining Properties

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR BUILDING PERMIT REPORT

About This Report

The EDR Building Permit Report provides a practical and efficient method to search building department records for indications of environmental conditions. Generated via a search of municipal building permit records gathered from more than 1,600 cities nationwide, this report will assist you in meeting the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527 - 21), or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

Building permit data can be used to identify current and/or former operations and structures/features of environmental concern. The data can provide information on a target property and adjoining properties such as the presence of underground storage tanks, pump islands, sumps, drywells, etc., as well as information regarding water, sewer, natural gas, electrical connection dates, and current/former septic tanks.

Methodology

EDR has developed the EDR Building Permit Report through our partnership with BuildFax, the nation's largest repository of building department records. BuildFax collects, updates, and manages building department records from local municipal governments. The database now includes 30 million permits, on more than 10 million properties across 1,600 cities in the United States.

The EDR Building Permit Report comprises local municipal building permit records, gathered directly from local jurisdictions, including both target property and adjoining properties. Years of coverage vary by municipality. Data reported includes (where available): date of permit, permit type, permit number, status, valuation, contractor company, contractor name, and description.

Incoming permit data is checked at seven stages in a regimented quality control process, from initial data source interview, to data preparation, through final auditing. To ensure the building department is accurate, each of the seven quality control stages contains, on average, 15 additional quality checks, resulting in a process of approximately 105 quality control "touch points."

For more information about the EDR Building Permit Report, please contact your EDR Account Executive at (800) 352-0050.

EDR® Environmental Data Resources Inc

BUILD FAX PROPERTY HISTORY

EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

A search of building department records was conducted by Environmental Data Resources, Inc (EDR) on behalf of Kimley Horn & Associates on May 20, 2024.

TARGET PROPERTY

James City County
Toano, VA 23168

SEARCH METHODS

EDR searches available lists for both the Target Property and Surrounding Properties.

RESEARCH SUMMARY

Building permits identified: **NO PERMITS IDENTIFIED**

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Name: JurisdictionName
Years: Years
Source: Source
Phone: Phone

BUILDING DEPARTMENT RECORDS SEARCHED

Name: James City County
Years: 1980-2024
Source: James City County, Code Compliance Division, WILLIAMSBURG, VA
Phone: (757) 253-6626

TARGET PROPERTY FINDINGS

TARGET PROPERTY DETAIL

James City County
Toano, VA 23168

No Permits Found

ADJOINING PROPERTY FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

No Permits Found

GLOSSARY

General Building Department concepts

- **ICC:** The International Code Council. The governing body for the building/development codes used by all jurisdictions who've adopted the ICC guidelines. MOST of the US has done this. Canada, Mexico, and other countries use ICC codes books and guides as well. There are a few states who have added guidelines to the ICC codes to better fit their needs. For example, California has added seismic retrofit requirements for most commercial structures.
- **Building Department (Permitting Authority, Building Codes, Inspections Department, Building and Inspections):** This is the department in a jurisdiction where an owner or contractor goes to obtain permits and inspections for building, tearing down, remodeling, adding to, re-roofing, moving or otherwise making changes to any structure, Residential or Commercial.
- **Jurisdiction:** This is the geographic area representing the properties over which a Permitting Authority has responsibility.
- **GC:** General Contractor. Usually the primary contractor hired for any Residential or Commercial construction work.
- **Sub:** Subordinate contracting companies or subcontractors. Usually a "trades" contractor working for the GC. These contractors generally have an area of expertise in which they are licensed like Plumbing, Electrical, Heating and Air systems, Gas Systems, Pools etc. (called "trades").
- **Journeymen:** Sub contractors who have their own personal licenses in one or more trades and work for different contracting companies, wherever they are needed or there is work.
- **HVAC (Mechanical, Heating & Air companies):** HVAC = Heating, Ventilation, and Air Conditioning.
- **ELEC (Electrical, TempPole, TPole, TPower, Temporary Power, Panel, AMP Change, Power Release):** Electrical permits can be pulled for many reasons. The most common reason is to increase the AMPs of power in an electrical power panel. This requires a permit in almost every jurisdiction. Other commons reason for Electrical permits is to insert a temporary power pole at a new construction site. Construction requires electricity, and in a new development, power has yet to be run to the lot. The temporary power pole is usually the very first permit pulled for new development. The power is released to the home owner when construction is complete and this sometimes takes the form of a Power Release permit or inspection.
- **"Pull" a permit:** To obtain and pay for a building permit.
- **CBO:** Chief Building Official
- **Planning Department:** The department in the development process where the building /structural plans are reviewed for their completeness and compliance with building codes
- **Zoning Department:** The department in the development process where the site plans are reviewed for their compliance with the regulations associated with the zoning district in which they are situated.
- **Zoning District:** A pre-determined geographic boundary within a jurisdiction where certain types of structures are permitted / prohibited. Examples are Residential structure, Commercial/Retail structures, Industrial/Manufacturing structures etc. Each zoning district has regulations associated with it like the sizes of the lots, the density of the structures on the lots, the number of parking spaces required for certain types of structures on the lots etc.
- **PIN (TMS, GIS ID, Parcel#):** Property Identification Number and Tax Map System number.
- **State Card (Business license):** A license card issued to a contractor to conduct business.
- **Building Inspector (Inspector):** The inspector is a building department employee that inspects building construction for compliance to codes.
- **C.O.:** Certificate of Occupancy. This is the end of the construction process and designates that the owners now have permission to occupy a structure after its building is complete. Sometimes also referred to as a Certificate of Compliance.

GLOSSARY

Permit Content Definitions

- Permit Number: The alphanumerical designation assigned to a permit for tracking within the building department system. Sometimes the permit number gives clues to its role, e.g. a "PL" prefix may designate a plumbing permit.
- Description: A field on the permit form that allows the building department to give a brief description of the work being done. More often than not, this is the most important field for EP's to find clues to the prior use (s) of the property.
- Permit Type: Generally a brief designation of the type of job being done. For example BLDG-RES, BLDG-COM, ELEC, MECH etc.

Sample Building Permit Data

Date: Nov 09, 2000
Permit Type: Bldg -
New Permit Number: 101000000405
Status: Valuation: $1,000,000.00
Contractor Company: OWNER-BUILDER
Contractor Name:

Description: New one store retail (SAV-ON) with drive-thru pharmacy. Certificate of Occupancy.

Hedera
James City County
Toano, VA 23168

Inquiry Number: 7657311.5
May 22, 2024

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available business directory data at approximately five year intervals.

RECORD SOURCES

The EDR City Directory Report accesses a variety of business directory sources, including Haines, InfoUSA, Polk, Cole, Bresser, and Stewart. Listings marked as EDR Digital Archive access Cole and InfoUSA records. The various directory sources enhance and complement each other to provide a more thorough and accurate report.

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RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	*Target Street*	*Cross Street*	*Source*
2020	☑	☑	EDR Digital Archive
2017	☑	☐	Cole Information
2014	☑	☑	Cole Information
2010	☑	☑	Cole Information
2005	☑	☑	Cole Information
2000	☑	☑	Cole Information
1995	☑	☑	Cole Information
1992	☑	☑	Cole Information

FINDINGS

TARGET PROPERTY STREET

James City County
Toano, VA 23168

Year	*CD Image*	*Source*

IVY HILL RD

2020	pg A2	EDR Digital Archive
2017	pg A5	Cole Information
2014	pg A6	Cole Information
2010	pg A9	Cole Information
2005	pg A11	Cole Information
2000	pg A13	Cole Information
1992	pg A18	Cole Information

IVY HL RD

1995	pg A15	Cole Information

ROUTE 657

2020	-	EDR Digital Archive	Street not listed in Source
2017	-	Cole Information	Street not listed in Source
2014	-	Cole Information	Street not listed in Source
2010	-	Cole Information	Street not listed in Source
2005	-	Cole Information	Street not listed in Source
2000	-	Cole Information	Street not listed in Source
1995	-	Cole Information	Street not listed in Source
1992	-	Cole Information	Street not listed in Source

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
RICHMOND RD			
2000	pg. A14	Cole Information	
1995	pg. A16	Cole Information	
1992	pg. A19	Cole Information	
RICHMOND RD W			
2014	pg. A7	Cole Information	
2010	pg. A10	Cole Information	
2005	pg. A12	Cole Information	
ROUTE 60			
2020	-	EDR Digital Archive	Street not listed in Source
2017	-	Cole Information	Street not listed in Source
2014	-	Cole Information	Street not listed in Source
2010	-	Cole Information	Street not listed in Source
2005	-	Cole Information	Street not listed in Source
2000	-	Cole Information	Street not listed in Source
1995	-	Cole Information	Street not listed in Source
1992	-	Cole Information	Street not listed in Source
W RICHMOND RD			
2020	pg. A4	EDR Digital Archive	

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

IVY HILL RD 2020

213	Terrence White
	Timothy White
219	Justine Powell
	Kyoung Finn
223	Kenneth Friesen
231	Shawnee Tyler
240	Anthony Walker
244	Jamal Jackson
248	Juanita Jackson
256	Alice Berkley
260	Kenneth Berkley
	Virginia Berkley
264	Laurie Wolf
265	Barbara Johnson
	Marvin Wallace
	Mary Wallace
	Tamekia Jones
272	Willie Johnson
273	Aftin Frazier
	Kenya Frazier
	Teresa Frazier
	Wardell Frazier
274	Cynthia Crusenberry
	Michael Crusenberry
281	Aaron Frazier
	Delmeetria Frazier
	Emmett Frazier
	Regina Frazier
284	Yarneeseca Jones
288	Craig Tyler
	Marie Tyler
289	Cornelius Wallace
	Randy Palmer
	Wanda Palmer
298	Donald Evans
	Timothy Rickerson
299	Jaquan Johnson
	Joseph Jones
	Latasha Jones
	Rashaka Williams
303	Mary Jones
305	Fernandez Jones
315	Candace Berkley
	Carl Berkley
	Lamonica Berkley
	Leslie Berkley
	Malisa Berkley
	Mary Berkley
	Viola Berkley
	William Berkley

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

IVY HILL RD 2020 (Cont'd)

316 Carletha Armstead
318 Robert Delaney
Ryan Givens
Tiera Mitchell

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

W RICHMOND RD 2020

8824	HERITAGE CHRISTIAN CHURCH
8864	EXTRA MILE LANDSCAPES
	PIONEER INN
	TWO DRUMMERS BBQ
	WADE BROTHERS ENTERPRISES INC
9001	CHRIST COMMUNITY CHURCH

Target Street	Cross Street	Source
✓	-	Cole Information

IVY HILL RD 2017

100	BANKS, KENNETH J
199	WHITE, OORRIE L
219	FINN, KYOUNG O
223	FRIESEN, KATHERINE
231	TYLER, SHAWNEE K
240	WALKER, ANTHONY C
248	JACKSON, ERIC
260	BERKLEY, KENNETH
264	WOLF, TRIXIE
265	JONES, JOSEPH M
268	JOHNSON, QUEEN E
272	JOHNSON, WILLIE
273	FRAZIER, AFTIN S
274	PIPKIN, GLENDA G
284	JONES, SHELIA D
288	TYLER, KIRK C
289	PALMER, RANDY L
298	RICKERSON, TIMOTHY L
299	WILLIAMS, ANDREA
303	JONES, MARY H
305	JONES, LAWRENCE L
315	BERKLEY, KENNETH
316	SMILEY ARIZONA
	SMILEY, ARIZONA

Target Street	Cross Street	Source
✓	-	Cole Information

IVY HILL RD 2014

100	BANKS, KENNETH J
193	DAVIS, LOLA R
199	WHITE, CARRIE
203	WHITE, AMANTHA
213	OCCUPANT UNKNOWN,
215	JONES, LAWRENCE L
219	FINN, KYOUNG O
223	FRIESEN, KATHERINE
231	OCCUPANT UNKNOWN,
240	WALKER, ANTHONY C
244	OCCUPANT UNKNOWN,
248	JACKSON, JAMES H
256	BERKLEY, KENNETH
260	BERKLEY, CAROL L
264	WOLF, LAURIE J
265	WALLACE, MARVIN L
268	JOHNSON, QUEEN E
272	JOHNSON, WILLY
273	FRAZIER, WARDELL N
274	EDWARDS, TANYA M
278	OCCUPANT UNKNOWN,
281	FRAZIER, EMMETT E
284	JONES, SHELIA D
288	TYLER, KIRK C
289	PALMER, RANDY L
298	OCCUPANT UNKNOWN,
299	JONES, MARY L
303	OCCUPANT UNKNOWN,
305	JONES, R
315	BERKLEY, VERNELL M
316	SMILEY, ARIZONA
341	PRESSEY, CHRISTINE D

Target Street	Cross Street	Source
-	✓	Cole Information

RICHMOND RD W 2014

8731 OCCUPANT UNKNOWN,
8735 SAWIN, JOHN F
8739 JOHNSON, DAVID G
8741 OCCUPANT UNKNOWN,
8743 STANKO, JOSEPH
8745 FIDLER, WILLIAM G
8768 OCCUPANT UNKNOWN,
8774 FLOYD, WILLIE S
8776 WALLACE, ANITA A
8780 RUTTLEY, BARBARA J
8788 ROBINSON, HERMAN M
8789 PALMER, JOSEPH C
8804 OCCUPANT UNKNOWN,
8808 ORTIZ, JOSE R
8809 OCCUPANT UNKNOWN,
8812 BURNS, JAMES A
8816 CALL, RICHARD T
8831 LEHMAN, DAVID J
8841 CARAMANICA, VICTORIA M
8842 BARNES, PAM K
8844 ROADY, MELISSA
8846 OCCUPANT UNKNOWN,
8847 JENKINS, HEIDI E
8859 CARMODY, MATTHEW
8863 BAKER, DEBBIE P
8864 EXTRA MILE LANSCAPES
LANDSCAPE COVER SOLUTIONS
OCCUPANT UNKNOWN,
TWO DRUMMERS SMOKEHOUSE LLC
8876 NEWBERG, RICHARD R
8877 CANTARA, STEVEN E
8888 OCCUPANT UNKNOWN,
8896 JOHNSON, BRIAN D
8952 JAMES CITY COUNTY RECYCLING
8990 LOVE, B
8996 OCCUPANT UNKNOWN,
9001 CHRIST COMMUNITY CHURCH
9021 MATTHEWS, SHIRLEY
9023 MATTHEWS, MICHAEL S
9062 BYRD, KAREN H
9067 BRITTAIN, MARK M
9072 BRICKHOUSE, ERIC
9086 EVELAND, RAYMOND D
9099 WILLIAMS, ROBERT D
9105 BUCKLAND, CALVIN D
9113 TAYLOE, RICHARD
9114 STEVENS, TRACY A
9125 MILLER, JEFF C
9126 KITSON, JAMES
9130 CROSWELL, HARRY M

Target Street	Cross Street	Source
-	✓	Cole Information

RICHMOND RD W 2014 (Cont'd)

9134	TAWNEY, JUDITH W
9136	POLK, ARNOLD T
9137	OCCUPANT UNKNOWN,
9152	WALTER-BODKINS, TROY
9155	LYON, CECIL D
	OCCUPANT UNKNOWN,
9160	EMERSON, TAYLOR
9175	COOKE, MIKE G
9176	HITT, DEBRA
9180	STRICKLAND, TAMMY M

Target Street	Cross Street	Source
✓	-	Cole Information

IVY HILL RD 2010

100	BANKS, KENNETH J
193	DAVIS, LOLA R
199	WHITE, CARRIE L
203	WHITE, AMANTHA
207	WHITE, JAMES E
219	FINN, KYOUNG O
231	TYLER, HERBERT E
240	WALKER, BRUCE E
256	BERKLEY, KENNETH
265	WALLACE, MARVIN L
268	JOHNSON, QUEEN E
273	FRAZIER, WARDELL N
274	JOHNSON, ANTHONY D
281	FRAZIER, EMMITT E
284	JONES, SHELIA D
288	TYLER, MARIE
289	PALMER, RANDY L
298	EVANS, DONALD
303	JONES, R
305	JONES, LAWRENCE L
315	BERKLEY, CANDACE C
318	DELANEYS GARAGE
341	PRESSEY, JARVIS L

Target Street	Cross Street	Source
-	✓	Cole Information

RICHMOND RD W 2010

8739	JOHNSON, DAVID G
8774	FLOYD, WILLIE S
8776	WALLACE, LUCILLE R
8780	RUTTLEY, BARBARA J
8788	ROBINSON, HERMAN M
8804	WHITE, JOHN L
8808	ORTIZ, JOSE R
8809	COX, RICHARD M
8816	CALL, RICHARD T
	R T CALL CO
8824	STONEHOUSE COMMUNITY CHURCH
8830	WALLS, HERMAN E
8831	PAYNE, ANNABELL C
8836	LOCKS, ROBERT M
8841	CARAMANICA, VICTORIA M
8842	SMITH, MELISSA R
8844	ROADY, M
8859	TEEL, JIMMY E
8864	EXTRA MILE LANDSCAPES
	HOG WILD SMOKEHOUSE
8877	KNEZICK, DONALD R
8888	WILLIAMSBURG HEATING & AC
	WILLIAMSBURG, HEATING A
8896	JOHNSON, BRIAN D
8952	JAMES CITY COUNTY RECYCLING
8990	TORCHIK, GEORGE
9001	CHRIST COMMUNITY CHURCH
9021	MATTHEWS, SUSAN M
9023	MATTHEWS, MICHAEL S
9062	BYRD, CHRISTOPHER L
9067	BRITTAIN, MARK
9072	BRICKHOUSE, ERIC
9086	LOPEZ, JESSICA
9099	WILLIAMS, ROBERT D
9105	BUCKLAND, CALVIN D
9113	THOMAS, LARRY W
9125	MILLER, JEFF C
9126	KITE, JAMES E
9130	CROSWELL, HARRY M
9134	TAWNEY, JUDITH W
9136	POLK, ARNOLD T
9152	WALTER, BEVERLY
9155	LYON, CECIL D
9180	HUBBARD, AMANDA

Target Street	Cross Street	Source
✓	-	Cole Information

IVY HILL RD 2005

100	BANKS, KENNETH J
193	DAVIS, LOLA R
199	WHITE, SHERRY T
203	WHITE, AMANTHA
213	WHITE, MARY
215	MITCHELL, DOUG S
223	FRIESEN, KEN
231	TYLER, ERIC
248	JACKSON, JUANITA L
256	BERKLEY, ROBERT L
260	BERKLEY, KENNETH
265	WILSON, RENEE L
268	JOHNSON, QUEEN E
273	FRAZIER, WARDELL N
284	JONES, LATASHA C
299	JAMES CITY CO
303	GREEN, ROKIA
305	WALLACE, MARY A
341	PRESSEY, JARVIS L

Target Street	Cross Street	Source
-	✓	Cole Information

RICHMOND RD W 2005

8768	ROBINSON, RALLEY B
8774	FLOYD, WILLIE S
8776	WALLACE, LUCILLE
8780	RUTTLEY, BARBARA J
8788	ROBINSON, HERMAN M
8804	WHITE, JOHN L
8816	CALL, RICHARD T
8824	STONEHO HURCH TO THE NATIONS
8830	WALLS, HERMAN E
8831	PAYNE, ANNABELL C
8836	LOCKS, MIKE
8842	ROADY, SHELBY P
8844	ROADY, M
8847	MOORE, JOSEPHINE T
8859	TEEL, ALICE J
8863	CARMODY, MATTHEW
8876	NEWBERG, RICHARD R
8877	CANTARA, STEVEN E
	PINELANDS NURSERY
8888	WILLIAMSBURG HEATING & AC
	WILLIAMSBURG, H
8896	JOHNSON, BRIAN D
8952	JOHNS USED AUTO PARTS
8990	KENNETH, BASSETT
8994	GRAVES, STACY
9023	MATTHEWS, MICHAEL S
9062	BYRD, CHRISTOPHER L
9067	BRITTAIN, CLAY V
9072	HOAR, DEBORAH L
9086	EVELAND, RAYMOND D
9099	WILLIAMS, ROBERT D
9105	BUCKLAND, CALVIN D
9114	STEVENS, WILLIAM J
9125	MILLER, JEFF
9126	KITE, JAMES E
9130	LUSK, DONALD B
9134	TAWNEY, JOHN W
9137	GARRETT, RONALD E
9152	WALTER, BEVERLY B
9155	LYON, CECIL D
	MOFFETT, AMANDA M

Target Street	Cross Street	Source
✓	-	Cole Information

IVY HILL RD 2000

193	DAVIS, LOLA R
199	WHITE, C
205	TYLER, JOHN L
	WHITE, F
207	WHITE, JAMES
215	MASON, SHELIA D
240	JONES, C T
256	BERKLEY, ALICE L
260	BERKLEY, CAROL L
268	JOHNSON, WILLIE H
273	FRAZIER, WARDELL
281	JACKSON, LAMONT
289	WALLACE, LILLIAN
303	JONES, M H
305	WALLACE, MARY
315	BERKLEY, ROBERT L
316	STREET, MARY J
341	PRESSEY, C T

Target Street	Cross Street	Source
-	✓	Cole Information

RICHMOND RD 2000

8600	BEAMON, G
	EUBANK, ANGELA
	SEELMAN, MOLLIE W
8602	GARRETT, G R
8607	WALLACE, LILLIE
8610	HIRSH, DWAYNE A
8611	WALLACE, A A
8612	BOECK, HEATHER R
	HIRSH, FRED
8618	CAROUSEL CERAMICS
	HENRYS TOWER SERVICE INCORPORATED
8630	HAZELWOOD, D L
8768	ROBINSON, R B
8774	FLOYD, WILLIE S
8776	WALLACE, LUCILLE
8780	RUTTLEY, BARBARA
8788	ROBINSON, HERMAN
8804	WHITE, JOHN
8809	COX, ROBERT B
8816	CALL, TODD
8830	WALLS, HERMAN E
8831	PAYNE, CARROLL
8836	LOCKS, MIKE
8841	CARAMANICA, V M
8842	ROADY, SHELBY
8847	MOORE, LESLIE J
8859	TEEL, A J
8863	SMITH, JUDY E
8864	COWAN, GREGORY L
8990	GRAVES, PRESTON E
8994	GRAVES, E
9001	ROCHELLE, WILBUR O
9021	MATTHEWS, S M
9062	BYRD, C L
9067	BRITTAIN, CLAY V
9114	STEELE, DAVID C
	STEVENS, JOHN
9125	GARRETT, RAYMOND L
9126	KITE, JAMES E
9134	TAWNEY, JOHN W
9152	WALTER, B
9155	STANCIL, SCOTT
9176	WOMICK, PHILLIP R
9223	PATSYS FAMILY DINER
9341	CURRIER, LISA
9428	JIMS WELL DRILLING & PUMP SERVICE
9478	CARROLL, JOHN T

Target Street	Cross Street	Source
✓	-	Cole Information

IVY HL RD 1995

193	DAVIS, LOLA R
195	DOBSON, KATIE A
199	WHITE, CARRIE
205	WHITE, F
209	WHITE, WILLIE
211	WHITE, L E
213	WHITE, M Q
215	MASON, SHEILA D
240	JONES, C T
256	BERKLEY, ALICE
268	JOHNSON, WILLIE H
273	FRAZIER, WARDELL
284	JONES, Y
289	WALLACE, LILLIAN
299	JONES, MARY L
303	GREEN, ROKIA
	JONES, MARY H
305	WALLACE, MARY
341	PRESSEY, C T

Target Street	Cross Street	Source
-	✓	Cole Information

RICHMOND RD 1995

8600	SEELMAN, MOLLIE W
8602	GRIMES, J S
	RONDI, ANTHONY S
8607	WALLACE, LILLIE
8610	HIRSH, T L
8611	WALLACE, DAVID R
8615	WHITE, VIVIAN
8630	TAYLOR, JACKIE
8632	ROWE, ED
8772	ROBINSON, VENTSON
8774	FLOYD, WILLIE S
8776	WALLACE, LUCILLE
8788	ROBINSON, HERMAN
8804	WHITE, JOHN
8809	COX, ROBERT B
8824	STONEHOUSE COMMUNITY CHURCH
8830	WALLS, HERMAN E
8831	PAYNE, CARROLL
8841	DRABIK, EDWARD M
8842	BARNES, MARTY D
	ROADY, SHELBY
8844	PARNELL, E C
8847	MOORE, LESLIE J
8859	TEEL, JIMMY
8864	BOWEN, FRED W
	HOUSE OF FRIED CHICKEN
	PIONEER INN
8952	JOHNS USED AUTO PARTS
8990	GRAVES, PRESTON E
9001	CHURCH OF CHRIST AT TOANO
9021	MATTHEWS, S M
9067	BRITTAIN, CLAY V
9105	BUCKLAND, CALVIN
9113	CARROLL, JOHN T
9114	STEELE, E G
9125	GARRETT, RAYMOND L
9126	KITE, JAMES E
9152	WALTER, B
9155	YATES, HARWOOD A
9176	WOMICK, PHILLIP R
9223	GANN, E C
	PATSYS FAMILY DINER
	WOODS, BRENDA M
9228	THOMAS, BLAKE
9237	STEWART, THOMAS G
9271	LOUVIER, JOAN
9301	HOZE, A
9335	MULLINAX, J L
	SMITH, RICHARD E
9430	GONZALES, E

Target Street	Cross Street	Source
-	✓	Cole Information

RICHMOND RD 1995 (Cont'd)

9464 ANDERSON, JUDY
9478 PANTEL, J L

Target Street	Cross Street	Source
✓	-	Cole Information

IVY HILL RD 1992

195	DOBSON, KATIE A
199	WHITE, CARRIE
213	WHITE, M Q
240	JONES, G W
268	JOHNSON, WILLIE H
281	FRAZIER, EMMETT E
289	WALLACE, LILLIAN
303	JONES, MARY H
315	BERKLEY, ALICE L
341	PRESSEY, C T

Target Street	Cross Street	Source
-	✓	Cole Information

RICHMOND RD 1992

8600	PREVISH, P
	TAYLOR, J
8602	BOHANNON, S C
8607	WALLACE, LILLIE
8611	WALLACE, DAVID R
8615	WHITE, VIVIAN
8630	TAYLOR, JACKIE
8632	SPENCE, JOEY
8772	ROBINSON, VENTSON
8774	FLOYD, WILLIE S
8776	WALLACE, LUCILLE
8788	ROBINSON, HERMAN
8809	COX, ROBERT B
8824	MARANATHA CHRISTIAN FELLOWSHIP
	PATTERSON, MICHAEL D
8830	WALLS, HERMAN E
8831	PAYNE, CARROLL
8842	BARNES, MARTY D
	PARNELL, EUGENE C
	ROADY, SHELBY
8859	TEEL, JIMMY
8863	OTEY, IDA M
8864	BOWEN, FRED W
	BRIARPATCH FAMILY RESTAURANT
8952	JOHN'S USED AUTO PARTS
	SPARRER W H INC
8990	GRAVES, PRESTON E
9021	MATTHEWS, S M
9067	BRITTAIN, CLAY V
9105	BUCKLAND, CALVIN
9113	CARROLL, JOHN T
9114	STEELE, E G
9125	GARRETT, RAYMOND L
9155	COLGIN, STEVEN
9176	WOMICK, PHILLIP R
9223	GRIM, STEVE
	THORNSTROM, ANN
9228	THOMAS, BLAKE
9307	BLANKS, E G
9422	MILLIS, ROBERT
9452	BURCHAM, SHIRLEY N
9470	PRIESMAN, R
9472	OTEY, RONALD L

Hedera

James City County

Toano, VA 23168

Inquiry Number: 7657311.3

May 20, 2024

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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05/20/24

Site Name:

Hedera
James City County
Toano, VA 23168
EDR Inquiry # 7657311.3

Client Name:

Kimley Horn & Associates
4500 Main Street
Virginia Beach, VA 23462-0000
Contact: Trevor Celata

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Certification # C64B-4F52-9D12

PO # NA

Project 113526017

UNMAPPED PROPERTY

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Sanborn® Library search results

Certification #: C64B-4F52-9D12

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- ☑ Library of Congress
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- ☑ EDR Private Collection

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Hedera
James City County
Toano, VA 23168

Inquiry Number: 7657311.6
May 20, 2024

The EDR Property Tax Map Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

EDR Property Tax Map Report

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NO COVERAGE

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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APPENDIX C

USER QUESTIONNAIRE
PART A

Site Name:	**Hedera Solar**
Client Name:	**Ester Rekhelman**
Client Contact and Phone Number:	**erekhelman@hexagon-energy.com** **434.218.0595**
Signature of Client:	Ester Rekhelman
Date:	**06/03/2024**

I. User Questions for Application of Landowner Liability Protections (LLPs) as defined in E 2247-16 Appendix X3

The following are a series of questions from ASTM 2247-16 that must be answered in order to qualify for LLPs under CERCLA. Please provide an answer to each question or attach pertinent information and identify a number for each attachment.

(1.) **Environmental liens that are filed or recorded against the property (40 CFR 312.25).**
Did a search of recorded land title records (or judicial records where appropriate, see Note 1 below) identify any environmental liens filed or recorded against the property under federal, tribal, state or local law?

NOTE 1-In certain jurisdictions, federal, tribal, state, or local statutes, or regulations specify that environmental liens and AULs be filed in judicial records rather than in land title records. In such cases judicial records must be searched for environmental liens and AULs.

□ No □ Yes (Describe or attach information) Attachment No. _____

_____

_____

(2.) Activity and use limitations that are in place on the property (40 CFR 312.26(a) (1) (v) and VI)).
Did a search of recorded land title records (or judicial records where appropriate, see Note 1 above) identify any AULs, such as engineering controls, land use restrictions or institutional controls that are in place at the property and/or have been filed or recorded against the property under federal, tribal, state or local law?

□ No □ Yes (Describe or attach information) Attachment No. _____

_____

_____

(3.) **Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28).**
Do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

□ No □ Yes (Describe or attach information) Attachment No. _____

USER QUESTIONNAIRE
PART A

The property has been owned by the landowner and their family for over 40 years during which it has been a wooded area the entire time. Historic aerial imagery shows it as a wooded area as far back as 1985.

(4.) Relationship of the purchase price to the fair market value of the property if it were not contaminated (40 CFR 312.29).
Does the purchase price being paid for this property reasonably reflect the fair market value of the property?

□ No □ Yes (Describe or attach information) Attachment No. _____

N/A this property is not being purchased.

If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property?

□ No □ Yes (Describe or attach information) Attachment No. _____

N/A this property is not being purchased.

(5.) Commonly known or reasonably ascertainable information about the property (40 CFR 312.30).
Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example,

(a) Do you know the past uses of the property?
□ No □ Yes (Describe or attach information) Attachment No. _____
The property has been owned by the landowner and their family for over 40 years during which it has been a wooded area the entire time. Historic aerial imagery shows it as a wooded area as far back as 1985.

.

(b) Do you know of specific chemicals that are present or once were present at the property?
□ No □ Yes (Describe or attach information) Attachment No. _____

_____

(c.) Do you know of spills or other chemical releases that have taken place at the property?
□ No □ Yes (Describe or attach information) Attachment No. _____

_____

(d.) Do you know of any environmental cleanups that have taken place at the property?
□ No □ Yes (Describe or attach information) Attachment No.

_____

(6.) The degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31).
Based on your knowledge and experience related to the property are there any obvious indicators that point to the presence or likely presence of releases at the property?

□ No □ Yes (Describe or attach information) Attachment No. _____

_____

_____

_____

APPENDIX D

RECORD OF COMMUNICATION

Project Name:	Hedera Solar		
KHA Project No.:	113526017		
Communication With:	Ellen & Noah Lightman	Date:	06-24-2024
Of:		Position:	
Address:		Recorded By:	Trevor Celata
Telephone No.:	443-629-4514	Time:	4pm
Fax:		Subject:	Phase I Interview

Summary of Communication:	Trevor Celata spoke with Ellen & Noah Lightman, the current owners of the Subject Property, via phone. Ellen and Noah answered all questions to the best of their knowledge.

Questions	Owner	Site Visit	Comments
How long have you been acquainted with property and how?			Mrs. Lightman stated she has been acquainted with the property for approximately 70 years.
To the best of your knowledge do you know if the property or any adjoining property is used for industrial use either currently or in the past?	YES **NO** UNK	YES **NO** UNK	
Has the property or any adjoining property ever been used as a gas station, car repair facility, commercial printing facility, dry cleaners, photo developing lab, or a waste treatment, storage, disposal, processing, or recycling facility?	YES **NO** UNK	YES **NO** UNK	
To the best of your knowledge are there currently or has there ever been any damaged or discarded automotive or industrial batteries, paints, pesticides, or other chemicals stored on or used on the property or any of the adjacent properties. In quantities greater than 5 gal wet or 50 gal dry?	YES **NO** UNK	YES **NO** UNK	
To the best of your knowledge are there currently or has there ever been any industrial drums (55 gal) or sacks of chemicals located or stored on the property or its adjacent properties?	YES **NO** UNK	YES **NO** UNK	
Do you know if any contaminated soil or soil from an unknown source has ever been used as fill on the property or its adjacent properties?	YES **NO** UNK	YES **NO** UNK	
Have you ever-observed or is there currently stained soil on the property or its adjacent properties?	YES **NO** UNK	YES **NO** UNK	
To the best of your knowledge are there currently or have there ever been unregistered or registered storage tanks above or belowground on the property or adjacent properties?	YES **NO** UNK	YES **NO** UNK	

RECORD OF COMMUNICATION

Project Name: Hedera Solar
Communication With: Ellen & Noah Lightman

Questions	Owner	Site Visit	Comments
Have you ever observed pits, ponds or lagoons on the property?	YES **NO** UNK	YES **NO** UNK	
Have you ever observed stains, seeps or drains stained with substances other than water?	YES **NO** UNK	YES **NO** UNK	
Are there any waste, wastewaters, chemicals, floor or equipment washings, etc. discharged to the subsurface on the property or adjacent properties (i.e. septic systems, floor drains, oil/water separators, pits)?	YES **NO** UNK	YES **NO** UNK	
Is there an on-site drinking water well in use? Any problems with water quality?	YES **NO** UNK	YES **NO** UNK	
Are you aware of any landfilling or dumping on the property?	YES **NO** UNK	**YES** NO UNK	Ms. Lightman stated she is not aware of any recent dumping on the property. She mentioned one instance of a sofa that was dumped on the side of Ivy Hill Road many years ago.
Are there transformers on the property?	YES **NO** UNK	**YES** NO UNK	
Are there any surface water discharges of waste/wastewater to streams, creeks or marsh/wetlands on the property?	YES **NO** UNK	YES **NO** UNK	
Are you aware of any environmental liens, activity or limitations?	YES **NO** UNK	YES **NO** UNK	
Do you know of any other environmental violations or environmental site assessments of the property that indicated the presence of hazardous substances or petroleum products?	YES **NO** UNK	YES **NO** UNK	

Comments: When asked about large mounds of tires and other debris that were observed within the northeast corner of the Subject Property during site reconnaissance, Ms. Lightman stated that she did not have knowledge of any dumping within that portion of the property and that she does not have any relationship with the adjoining landscape business to the northeast. Ms. Lightman also stated that she does not have any knowledge of the concrete structure that was observed northwest of the intersection of Ivy Hill Road and Hill Lane.

Freedom of Information Act Request Form

Submission date: 05-24-2024

Did you know the information you are looking for may already be online? We have compiled a list of the most frequently requested FOIA items. Please take a moment to review this resource prior to submitting a request.

Requestor Information

Name: Trevor Celata

Company: Kimley-Horn

Street: 2035 Maywill St, Suite 200

City: Richmond

State: VA

Zip: 23230

Office phone: 804-495-6297

Cell phone:

Email address: trevor.celata@kimley-horn.com

Requested Site Information

Facility name (if applicable):

Former name/owner (if applicable):

Please Note: DEQ is unable to search latitude/longitude, parcel or tax ids, radii, or adjacent properties without an address.

- 101 Ivy Hill Rd, Toano, VA 23168
- 121 Ivy Hill Road, Toano, VA 23168

Additional information:

List each property individually and include the PC#, IR#, Facility ID, Permit #, EPA ID#, or adjacent properties if known.

- 8877 Richmond Rd, Toano, VA 23168
- 9001 Richmond Rd, Toano, VA 23168
- 8888 Richmond Rd, Toano, VA 23168
- 8888 Richmond Rd, Toano, VA 23168
- 8841 Richmond Rd, Toano, VA 23168

What date range is this requested for? ☐ Last 12 months ☐ Last 5 years ☑ Other

If other, please specify dates: All to

Requested Information

Please be as specific as possible in describing the information you are requesting.

Any information pertaining to USTs/ASTs, leaking tanks/pollution complaints. Any environmental compliants.

Please provide past history and current usage of property. Any information is helpful. *(Example: private residence, undeveloped land, current operating business, former business, industrial property, etc.)*

*Depending on the form and/or volume of information available, there may be charges for your request. If a potential charge applies, you will contacted prior to request fulfillment.

Where to send this form

To determine where your request should be submitted, select either the DEQ regional office where your site(s) is located, Central Office or entire state to include multiple locations

Entire State Search
To submit this FOIA request for entire state or Central Office, please email this form to deqfoias@deq.virginia.gov. Questions about your request can be answered by calling (540) 574-7886.

Central Office (CO)
To submit this FOIA request for Central Office, please email this form to deqfoias@deq.virginia.gov. Questions about your requests can be answered by calling (540) 574-7886.

Piedmont Regional Office (PRO)
To submit this FOIA request for the Piedmont Regional Office, please email this form to profoia@deq.virginia.gov. Questions about your requests can be answered by calling 804-527-5020.

- Counties: Amelia, Brunswick, Buckingham, Charles City, Chesterfield, Cumberland, Dinwiddie, Essex, Gloucester, Goochland, Greensville, Hanover, Henrico, King and Queen, King William, Lancaster, Lunenburg, Mathews, Mecklenburg, Middlesex, New Kent, Northumberland, Nottoway, Powhatan, Prince Edward, Prince George, Richmond, Surry, Sussex and Westmoreland
- Cities: Colonial Heights, Emporia, Hopewell, Petersburg and Richmond

Blue Ridge Regional Office (BRRO)
To submit this FOIA request for Blue Ridge Regional Office, please email this form to foiaroanoke@deq.virginia.gov. Questions about your requests can be answered by calling (540) 562-6748.

- Counties: Alleghany, Amherst, Appomattox, Bedford, Botetourt, Campbell, Charlotte, Craig, Floyd, Franklin, Giles, Halifax, Henry, Montgomery, Patrick, Pittsylvania, Pulaski, and Roanoke
- Cities: Bedford, Clifton Forge, Danville, Covington, Lynchburg, Martinsville, Radford, Roanoke and Salem

Tidewater Regional Office (TRO)
To submit this FOIA request for the Tidewater Regional Office, please email this form to trofoias@deq.virginia.gov. Questions about your request can be answered by calling 757-581-2000 ext. 0.

- Counties: Accomack, Isle of Wight, James City, Northampton, Southampton and York
- Cities: Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach and Williamsburg

Valley Regional Office (VRO)
To submit this FOIA request for the Valley Regional Office, please email this form to vrofoia@deq.virginia.gov. Questions about your request can be answered by calling (540) 574-7886.

- Counties: Albemarle, Augusta, Bath, Clarke, Fluvanna, Frederick, Greene, Highland, Nelson, Page, Rockbridge, Rockingham, Shenandoah and Warren
- Cities: Buena Vista, Charlottesville, Harrisonburg, Lexington, Staunton, Waynesboro, and Winchester

Northern Regional Office (NRO)
To submit this FOIA request for the Northern Regional Office, please email this form to nrofoia@deq.virginia.gov. Questions about your request can be answered by calling (703) 583-3800.

- Counties: Arlington, Caroline, Culpeper, Fairfax, Fauquier, King George, Loudoun, Louisa, Madison, Orange, Prince William, Rappahannock, Spotsylvania and Stafford
- Cities: Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas and Manassas Park

Southwest Regional Office (SWRO)
To submit this FOIA request for the Southwest Regional Office, please email this form to swrofoias@deq.virginia.gov. Questions about your request can be answered by calling (276) 676-4800.

- Counties: Bland, Buchanan, Carroll, Dickenson, Grayson, Lee, Russell, Scott, Smyth, Tazewell, Washington, Wise and Wythe
- Cities: Bristol, Galax, and Norton

FORM 1

VIRGINIA PETROLEUM STORAGE TANK FUND

REIMBURSEMENT APPLICATION

DEQ Use Only			
Claim No:	1	Closed:	X 8/14/2020
Open:		Reopen:	

Complete and submit with all required supporting documentation to Department of Environmental Quality, Office of Spill Response and Remediation, P.O. Box 1105, Richmond, VA 23218. Type or print legibly the required information in the applicable sections below. Refer to the reverse side for instructions on how to complete the form. The application will NOT be accepted unless the Certification in Section VII has been signed by the claimant.

I. Claimant Information

A. Claimant Name	B. Pollution Complaint Number	
Raymond and Marion Eveland	**2020-5167**	
C. Claimant Mailing Address	D. City, State	E. Zip Code:
9086 Richmond Road	**Toano, VA**	**23168**
F. Claimant Telephone No:	G. Claimant Fax No:	H. Claimant E-mail Address:
757-784-0182		
I. Contact Person for Reimbursement	J. Contact Person Telephone No.	K. Contact Person Fax No.
Tammy Coffey (PetroChem)	**(757) 375-7056**	( )
L. Contact Person for Reimbursement E-mail:	M. Contact Person Cell No.	N. Regional Office Handling Case
tcoffey@hepaco.com	**(757) 375-7056**	**Tidewater**

II. Site Information

A. Site Name	B. Site Location	
Eveland Residence	**9086 Richmond Road**	
C. City, State		D. Zip Code
Toano, VA		**23168**

III. Insurance Information

A. Do you have insurance that would cover a petroleum storage tank release?

☐ Yes ☒ No

If you answered "Yes" to the above question, you are required to submit a complete copy of the text, endorsements, and declarations page of the above referenced insurance policy(ies). DEQ will NOT review your claim until you submit a complete copy of the policy(ies).

IV. UST Annual Gallonage - DO NOT COMPLETE FOR HOME HEATING OIL OR FARM TANKS

The total number of gallons pumped, during the year prior to the release [1], through all regulated underground storage tanks the claimant owns or operates in the Commonwealth of Virginia. Check only **one** box.

☐ Less than 600,000 gallons

☐ Between 600,000 and 1,200,000 gallons

☐ Between 1,200,001 and 1,800,000 gallons

☐ Between 1,800,001 and 2,400,000 gallons

☐ More than 2,400,000 gallons

[1] The year prior to the release can be any consecutive 12-month period, which starts no more than 24 months prior to the release report date, and ends no later than the release report date.

V. AST Storage Capacity - DO NOT COMPLETE FOR HOME HEATING OIL TANKS

Are the net annual profits for this operation less than or equal to $10 million? (Check one)

☐ Yes ☐ No

1. If you indicated "Yes" to the question above, please complete the following:

   The number of gallons of storage capacity for all ASTs at THIS facility at the time the discharge was reported to the Department of Environmental Quality was _____

2. If you indicated "No" to the question above, please complete the following:

   The number of gallons of storage capacity for all this operators ASTs at ALL Virginia facilities at the time the discharge was reported to the Department of Environmental Quality was _____

FORM 1

VIRGINIA PETROLEUM STORAGE TANK FUND

REIMBURSEMENT APPLICATION

VI. Claimant Certification

I hereby certify that:

1. This is the one and only Reimbursement Application that will be submitted for the completed corrective action Phase(s) and/or sub-phases identified on the worksheets submitted in this application.
2. Under penalty of perjury, all costs claimed in this application were incurred by me to clean up this release, and all data and documentation submitted as part of this application are true and correct.
3. I understand that items inadvertently or otherwise omitted from the application will NOT be accepted by DEQ after the reimbursement decision package has been issued.
4. I understand that I am required by law to pay a financial responsibility requirement before I am eligible for reimbursement, and I agree to pay DEQ on demand, any remaining financial responsibility requirements.
5. I agree to grant DEQ and its contractor(s) reasonable access to the contaminated site.
6. I am responsible for immediately notifying DEQ in writing should any information change on any pending claim.
7. I am the owner/operator whom DEQ has designated as the responsible person for the clean up of this site.
8. I authorize my consultant to provide all data and documentation associated with the costs incurred for this site.

Raymond Eveland
Print Claimant's Name

/s/ Raymond Eveland
Claimant's Signature

8-7-20
Date

VII. Consultant Certification - To be completed by the primary consultant

I hereby certify that:

1. That all data and documentation submitted in this application is true and correct.
2. That the work claimed as performed and invoiced in this claim was performed for this release.
3. I authorize DEQ to examine and audit all records and supporting documents related to this claim and, if applicable, the reconsideration of this claim.

Tamara L. Coffey
Print Consultant's Name

/s/ Tamara L. Coffey
Consultant's Signature

PetroChem - a HEPACO Company
Company Name

8-31-20
Date

FORM 2

Virginia Petroleum Storage Tank Fund (VPSTF)

PAYMENT ASSIGNMENT FORM

This form is for use by claimants who wish to assign their reimbursement payment to another party. A notarized original of this form must be submitted with each reimbursement application for which the claimant wishes to assign the payment to another party. All assignments are subject to the approval of DEQ.

Claim Assignment (must be completed by Claimant)

Pollution Complaint No.: **2020-5167**

Claimant Name: **Raymond and Marion Eveland**

Total Costs Claimed in this Application: **$** 8094.10

Contact Name: **Tammy Coffey**

Contact Telephone: **757-375-7056**

Party to Receive Payment:

Name: **PetroChem - a HEPACO Company**

Address: **2711 Burch Drive**

City: **Charlotte** State **NC** Zip **28269**

Contact Email: **tcoffey@hepaco.com**

By Signing Below, I:

1. Assign the VPSTF payment for the above-referenced claim and any reconsideration of that claim to the Assignee designated above.
2. Warrant and represent that I have not assigned or pledged my reimbursement payment to any other person or entity and it is hereby being assigned and transferred free and clear of any and all leins and encumbrances.
3. Warrant and represent that I am the claimant, or in claims in which the claimant is not an individual, that I have the authority to assign this payment on behalf of the claimant.
4. Agree that the assignment by this form applies only to the reimbursement claim with which it is submitted and any reconsideration of that claim.
5. Agree that use of this form does not transfer my liability for corrective action and/or third party claims.
6. Agree that any check issued as a result of this reimbursement claim will be issued only in the name of the party designated as the Assignee on this form.
7. Agree that if the check is issued to the claimant rather than the party designated as Assignee on this Assignment Request Form, I bear the responsibility for transferring the payment to the Assignee.

Raymond Eveland — Claimant Signature

8-7-20 — Date

Notary Certificate of Acknowledgment:

State of Virginia } ss: City/County of James City County

The foregoing instrument was acknowledged before me this 7 day of August, 2020 by: Raymond Eveland

Same name as Claimant Signature

/s/ [signature] My commission expires 9-30-20 Notary No: 350545

Notary Signature

Notary Stamp

TAMARA L. COFFEY
NOTARY PUBLIC
COMMONWEALTH OF VIRGINIA
REGISTRATION # 350545
MY COMMISSION EXPIRES SEP. 30, 2020

Revised: 02/01/2016

Form **W-9**
Commonwealth of Virginia
Substitute W-9 Form
Revised July 2014

Request for Taxpayer Identification Number and Certification

Section 1 - Taxpayer Identification

☐ **Social Security Number (SSN)**

☒ **Employer Identification Number (EIN)**

5 6 1 4 2 8 4 4 9

Please select the appropriate Taxpayer Identification Number (EIN or SSN) type and enter your 9 digit ID number . The EIN or SSN provided must match the name given on the "Legal Name" line to avoid backup withholding. If you do not have a Tax ID number, please reference "Specific Instructions - Section 1." If the account is in more than one name, provide the name of the individual who is recognized with the IRS as the responsible party.

Dunn & Bradstreet Universal Numbering System (DUNS) (see instructions)

1 1 5 9 9 3 2 9 7

Legal Name: HEPACO, LLC

Business Name: PetroChem Recovery Services

Entity Type		Entity Classification		Exemptions (see instructions)
☐ Individual	☐ Corporation	☐ Professional Services	☐ Medical Services	Exempt payee code (if any):
☐ Sole Proprietorship	☐ S-Corporation	☐ Political Subdivision	☐ Legal Services	(from backup withholding)
☐ Partnership	☐ C-Corporation	☐ Real Estate Agent	☐ Joint Venture	
☐ Trust	☐ Disregarded Entity	☐ VA Local Government	☐ Tax Exempt Organization	Exemption from FATCA reporting code (if any):
☐ Estate	☒ Limited Liability Company	☐ Federal Government	☐ OTH Government	
☐ Government	☒ Partnership	☐ VA State Agency	☒ Other	
☐ Non-Profit	☐ Corporation			

Contact Information

Legal Address:	9335 Harris Corners Parkway Suite 220	Name:	Shanon Carter
		Email Address:	accountsreceivable@hepaco.com
City: Charlotte	State : NC Zip Code: 28269	Business Phone:	(704) 598-9782
Remittance Address:	2711 Burch Drive	Fax Number:	(704) 597-2406
		Mobile Phone:	
City: Charlotte	State : NC Zip Code: 28269	Alternate Phone:	

Section 2 - Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined later in general instructions), and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions: You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See instructions titled Certification

Printed Name:	Shanon Carter		
Authorized U.S. Signature:	Shanon R. Carter	Date:	7-30-19

INVOICE

A HEPACO Company
P.O. Box 746228
Atlanta, GA 30374-6228

INVOICE NO: FY20-1011863
INVOICE DATE: 11/3/2020
DUE DATE: 12/3/2020

To: **EVELAND, RAYMOND AND MARION**
9086 Richmond Road
Toano, VA 23168
Attn: Raymond Eveland

Project Location: **EVELAND RESIDENCE**
9086 RICHMOND ROAD
TOANO, VA 23168

PROJECT MANAGER	HEPACO JOB #	CUSTOMER #	BILLED THROUGH	PO#	TERMS
Coffey, Tamara L	2027.01261	EVE0014	8/14/2020	PC# 2020-5167	NET 30

DESCRIPTION	AMOUNT
To invoice you for necessary labor and equipment to: investigate a release from a 280-gallon heating oil AST line leak in crawlspace; install blower to vent crawlspace; monitor residence for vapors; collect soil samples; treat spill area with MicroBlaze; install vapor barrier; prepare a Site Characterization Report; and prepare a Reimbursement Claim for submittal to the Department of Environmental Quality for the property of Raymond and Marion Eveland at 9086 Richmond Road, Toano, VA.	$8,094.10
SUBTOTAL	$8,094.10
FEES	
SALES TAX	$0.00
TOTAL DUE	**$8,094.10**

Please note ACH instructions (preferred) & updated remit to address

ACH or Wire Transfer:	Checks:	Overnight Checks:
[redacted]	HEPACO, LLC PO Box 746228 Atlanta, GA 30374-6228	PNC Bank c/o HEPACO Lockbox # 746228 Phoenix Business Park 1669 Phoenix Pkwy., #210 College Park, GA 30349

If you have any questions concerning this invoice, contact: Accounts Receivable: AccountsReceivable@HEPACO.com or 855.233.8633
HEPACO is not responsible for filing claims with your insurance company.
For your convenience we gladly accept Visa, MasterCard or American Express, subject to a convenience fee of 3%.
Please reference our invoice number on payment.
Accounts which remain unpaid past due date from billing date are subject to late charge of 1½% per month.
Customer shall pay, or reimburse HEPACO, LLC if it elects to pay, all costs incurred in collecting any past due amounts, including, without limitation, court and collection costs and reasonable attorneys' fees.

THANK YOU FOR YOUR BUSINESS!!

Verde Environmental, Inc.

9223 Eastex Freeway
Houston, TX 77093-7001
USA

Voice: 713/691-6468
Fax: 713/691-2331

INVOICE

Invoice Number: 49533
Invoice Date: Mar 12, 2020
Page: 1

Bill To:
Petro Chem Recovery Services P.O. Box 1458 Norfolk, VA 23501

Ship to:
Petro Chem Recovery Services Attn: Amber Kidwell 635 Maltby Ave. Norfolk, VA 23504 757-449-1732

Customer ID	Customer PO	Payment Terms	
Petro-Chem	21-101206	Net 30 Days	
Sales Rep ID	**Shipping Method**	**Ship Date**	**Due Date**
	Southeastern Freight	3/13/20	4/11/20

Quantity	Item	Description	Unit Price	Amount
5.00	5-MB-NF	5-Gal. Pail of Micro-Blaze Non Formulated (Lot#2003130001)	160.00	800.00
10.00	5-MBELSC	5-Gal. Pail of Micro-Blaze Emergency Liquid Spill Control (Lot#2002250001)	170.00	1,700.00

X0001 = $34.00/gallon plus $3.04/gallon freight

= $37.04/gallon plus 16% markup

Subtotal	2,500.00
Sales Tax	
Freight **75 gallons @ $3.04/gallon**	228.45
Total Invoice Amount	2,728.45
Payment/Credit Applied	
TOTAL	**2,728.45**

Check/Credit Memo No:

INVOICES THAT REACH 60-DAYS PAST DUE WILL AUTOMATICALLY BECOME C.O.D. ACCOUNTS.

Universal Laboratories

20 Research Drive

Hampton ,VA. 23666

1-800-695-2162 • Fax 757-865-8014

Invoice for Testing and Services

Invoice To: Petrochem Accounts Payables
Petrochem Recovery Services
Accounts Payable
P.O. Box 1458
Norfolk, VA 23501

Invoice Date: 04/06/2020
Invoice #: UL-040620-008
Due Date: 04/06/2020

COC Name: Eveland

PO#:21-101243

Order #: 2003337

For: 2003337-001 **Sample Name:** CS #1

Received: 03/24/2020

Item Description	***Quantity***	***Unit Price***	***Total***
Diesel Range Organics SOLID	1	$87.68	$87.68
Environmentally Responsible Waste Management	1	$0.00	$0.00

Sub Total	$87.68
Sales Tax	$0.00
Total:	$87.68

We appreciate the opportunity to serve you. At your convience please remit the amount indicated to our Accounts Receivable Department. If you have any questions regarding these charges please contact your Project Manager.

Please include the invoice number with your payment

Universal Laboratories

20 Research Drive
Hampton ,VA. 23666
1-800-695-2162 • Fax 757-865-8014

Invoice for Testing and Services

Invoice To: Petrochem Accounts Payables
HEPACO, LLC
Accounts Payable
P.O. Box 1458
Norfolk, VA 23501

Invoice Date: 06/26/2020
Invoice #: UL-062620-014
Due Date: 06/26/2020

COC Name: Eveland

PO#: 21-101512

Order #: 2006248

For: 2006248-001 **Sample Name:** DW Well

Received: 06/16/2020

Item Description	*Quantity*	*Unit Price*	*Total*
Volatile Organics AQ	1	$168.00	$168.00
Environmentally Responsible Waste Management	1	$0.00	$0.00
Semi Volatile Organics AQ	1	$195.83	$195.83
		Sub Total	$363.83
		Sales Tax	$0.00
		Total:	$363.83

We appreciate the opportunity to serve you. At your convience please remit the amount indicated to our Accounts Receivable Department. If you have any questions regarding these charges please contact your Project Manager.

Please include the invoice number with your payment

VIRGINIA PETROLEUM STORAGE TANK FUND
CLAIM DECISION SUMMARY

***** This is not a bill *****

Decision Date: 11/11/2020

PC NO.: 20205167 **Claim No.:** 1 **Phase(s):** SCR **Start Date:**
Claimant: RAYMOUND EVELAND **End Date:**
Site Name: Eveland Raymond and Marion Residence **Subphase:**

Deductions Calculation			
	FR	Ins	Other
Level for Site	$500.00		$0.00
Applied on Prior Claims	$0.00	$0.00	$0.00
Balance Prior to this Claim	$500.00	$0.00	$0.00
Applied on this Claim	$500.00	$0.00	$0.00
Balance Due in Future Claims	$0.00	$0.00	$0.00

Payment Information

As requested on Form 1 (or Form 2 if assigned), payment will be made payable to :
Status: Limited Liability Co
HEPACO LLC
2711 BURCH DR

CHARLOTTE NC 28269

Claim Summary	
Amount Claimed	$8,094.10
Minus Denied Costs	$16.87
Allowed Amount	$8,077.23
Insurance (IC):	$0.00
FR:	$500.00
Adjustments:	$0.00
Deferred:	$0.00
Total Deduction:	$500.00
Payment Amount	$7,577.23

Reconsideration Notice: If you wish to contest this claim decision, you must follow the VPSTF Reimbursement Guidance Manual, Volume V; Reconsideration Procedures. This is the only method available to correct errors in this claim decision, regardless of whether the error was caused by you, your consultant, or DEQ. The completed Reconsideration Claim Form with supporting documentation must be **RECEIVED by DEQ within 45 days of your Decision Date as stamped above. If you fail to meet this deadline, this reimbursement decision becomes FINAL and cannot be contested.** Cashing your check **WILL NOT** affect your ability to file for Reconsideration. Please note that the Reconsideration procedures occasionally change, and that the date of the revision is identified on the cover page.

Cost Recovery Notice: This decision is based on information currently available to DEQ. If information obtained in the future indicates that the amount approved for payment should have been less, then the overpayment may be recovered by DEQ either through deductions from future reimbursements or through other cost recovery proceedings. Please note that you are required to maintain all records supporting your claim for seven years from the date of reimbursement. DEQ may require you to submit these records at any time during this period.

Questions concerning this Decision Summary should be directed to the customer service line at (804) 698 - 4358 or e-mail: tank@deq.virginia.gov. Information can also be obtained from the DEQ web site at http://www.deq.virginia.gov/Programs/LandProtectionRevitalization/PetroleumProgram.aspx.

DEQ Use Only:

Fund	Program	Subprogram	Element	Object	Project	Task	Phase	Cost
0748	515	11	97	1411	83702			611

Total Financial Responsibility (FR) Calculation Details					
Group	**Tank Types Associated With This Occurrence**	**Occurrence(s) at this site**	**Gallonage Storage Capacity**	**Net Profitability**	**FR Applicable To This Occurrence**
1	N Regulated UST N Excluded UST N Deferred UST N Partially Deferred UST				$0.00
2	N Exempt UST 1 N Exempt UST 2 Y Small Heating Oil AST	1			$500.00
3	N Regulated AST Facility N Unregulated AST Facility				$0.00
				Total Financial Responsibility (FR) Applicable To This PC Number:	**$500.00**

Site Reimbursement History

Claim # & Type	Decision Date	Amount Claimed	Amount Allowed	FR Applied	Insurance Applied	Other Subtractions	Amount Reimbursed
1 REG	11/11/2020	$8,094.10	$8,077.23	$500.00	$0.00	$0.00	$7,577.23
	Total To Date:	**$8,094.10**	**$8,077.23**	**$500.00**	**$0.00**	**$0.00**	**$7,577.23**

*** Amount Claimed total does not include amounts submitted for reconsideration or rejected claims. The amount reimbursed for claims with no decision date is not final and may be subject to change.**

VPSTF REIMBURSEMENT DECISION WORKSHEET

PC Number: 20205167
Claim Number: 1 **UCR Rate:** 2019
Worksheet Phase: SCR

Task Material Code	Line Item #		Description	Invoice Number	Claimed Units	Verified Units	Unit UCR	Verified Unit UCR	Amount Claimed	Amount Allowed	Denied Amount	Denial Code
I2020		**Summary**		**All**	**600**	**600**	**$0.58**	**$345.00**	**$345.00**	**$345.00**		
I2020	1321824	Detail	Vehicle Mileage (2020)Vehicle Mileage	20-1011863	600				$345.00	$345.00		
M2103		**Summary**		**All**	**7.50**	**7.50**	**$90.00**	**$675.00**	**$675.00**	**$675.00**		
M2103	1321818	Detail	Mid-Level ProfessionalMid-Level Professional	20-1011863	7.50				$675.00	$675.00		
M2105		**Summary**		**All**	**15.50**	**15.50**	**$68.00**	**$1,054.00**	**$1,054.00**	**$1,054.00**		
M2105	1321820	Detail	Senior TechnicianSenior Technician	20-1011863	15.50				$1,054.00	$1,054.00		
M2133		**Summary**		**All**	**2.50**	**2.50**	**$90.00**	**$225.00**	**$225.00**	**$225.00**		
M2133	1321819	Detail	Mid-Level Professional TravelMid-Level Professional Travel	20-1011863	2.50				$225.00	$225.00		
M2134		**Summary**		**All**	**12.50**	**12.50**	**$78.00**	**$975.00**	**$975.00**	**$975.00**		
M2134	1321823	Detail	Junior Level Professional TravelJunior Level Professional Travel	20-1011863	12.50				$975.00	$975.00		
M2135		**Summary**		**All**	**17.50**	**17.50**	**$68.00**	**$1,190.00**	**$1,190.00**	**$1,190.00**		
M2135	1321821	Detail	Senior Technician TravelSenior Technician Travel	20-1011863	17.50				$1,190.00	$1,190.00		
M2206		**Summary**		**All**	**1**	**1**	**$98.50**	**$98.50**	**$98.50**	**$98.50**		

M2206	1321826	Detail	Method 8015, TPH-DRO in solid waste/soil8015 TPH-DRO in solid waste/soil	20-1011863	1				$98.50	$98.50
M2207		**Summary**		**All**	**1**	**1**	**$156.50**	**$156.50**	**$156.50**	**$156.50**
M2207	1321827	Detail	Method 8021/8260/624, VOCs in water/wastewater8021/8260/624 VOCs & oxygenates in water/wastewate	20-1011863	1				$156.50	$156.50
M2213		**Summary**		**All**	**1**	**1**	**$263.90**	**$263.90**	**$227.27**	**$227.27**
M2213	1321828	Detail	PAHs by Method 8270/6258270/625 PAHs	20-1011863	1				$227.27	$227.27
M2311		**Summary**		**All**	**1**	**1**	**$44.80**	**$44.80**	**$44.80**	**$44.80**
M2311	1321830	Detail	Hand AugerHand Auger	20-1011863	1				$44.80	$44.80
M2417		**Summary**		**All**	**2**	**2**	**$456.10**	**$912.20**	**$912.20**	**$912.20**
M2417	1321825	Detail	Ventilation/Exhaust Blower, ~1500 CFMVentilation/Exhaust Blower, ~1500 CFM	20-1011863	2				$912.20	$912.20
M2471		**Summary**		**All**	**0.25**	**0.25**	**$116.20**	**$29.05**	**$29.05**	**$29.05**
M2471	1321832	Detail	Plastic Sheeting (100’ x 20’) – 6-milPlastic Sheeting (100&#65533; x 20&#65533;) &#65533; 6-mil	20-1011863	0.25				$29.05	$29.05
T200		**Summary**		**All**	**2.50**	**2.50**	**$98.00**	**$245.00**	**$245.00**	**$245.00**
T200	1321822	Detail	Monitor for Vapor HazardsMonitor for Vapor Hazards	20-1011863	2.50				$245.00	$245.00
T206		**Summary**		**All**	**1**	**1**	**$292.00**	**$292.00**	**$292.00**	**$292.00**
			Site Reconnaissance & Initial Site Map: StandardSite	20-						

T206	1321833	Detail	Reconnaissance & Initial Site Map, Standard	1011863	1				$292.00	$292.00	
T226		**Summary**		**All**	**1**	**1**	**$0.05**	**$0.05**	**$397.10**	**$384.63**	**$12.47**
T226	1321835	Detail	General Project ManagementGeneral Project Management	20-1011863	1				$397.10	$384.63	$12.47 D41
T239		**Summary**		**All**	**1**	**1**	**$92.00**	**$92.00**	**$92.00**	**$92.00**	
T239	1321829	Detail	Domestic Well SamplingDomestic Well Sampling	20-1011863	1				$92.00	$92.00	
T246		**Summary**		**All**	**6**	**6**	**$132.00**	**$792.00**	**$792.00**	**$792.00**	
T246	1321834	Detail	Report PreparationReport Preparation	20-1011863	6				$792.00	$792.00	
X0001		**Summary**		**All**	**8**	**8**	**$0.00**	**$0.00**	**$343.68**	**$339.28**	**$4.40**
X0001	1321831	Detail	MicroBlaze	20-1011863	8				$343.68	$339.28	$4.40 D28
								Total:	**$8,094.10**	**$8,077.23**	**$16.87**

VIRGINIA PETROLEUM STORAGE TANK FUND
Denial Response Report

PC Number: 20205167
Claim Number: 1

Denial Code	Description	Response
D28	Markup that exceeds the approved rate is not eligible for reimbursement.	To respond to a D28 denial, you must demonstrate that the total cost did not exceed the approved markup rate.
D41	Costs must be reasonable and necessary to be reimbursed. The Usual and Customary Rates (UCRs) contain the rates deemed reasonable by DEQ. Costs reported as performed and incurred exceeded the units reported times the UCR.	To respond to a D41 denial, you must demonstrate that the UCRs were incorrectly applied or provide site-specific justification for the costs, or submit copies of at least three competitive bids containing identical scopes of work which were obtained BEFORE incurring the costs.

Commonwealth of Virginia

Claim Decision, rr <claim.decision@deq.virginia.gov>

2020-5167 Eveland SCR Reimbursement Claim

2 messages

Tamara Coffey <tcoffey@hepaco.com> Wed, Nov 4, 2020 at 9:27 AM
To: "claim.decision@deq.virginia.gov" <claim.decision@deq.virginia.gov>

Attached please find the original reimbursement claim application for PC# 2020-5167, SCR that contains my client's signature.

Tammy Coffey

Project Manager

HEPACO – Norfolk Branch

P.O. Box 1779

Norfolk, VA 23501

Phone (757) 543-5718

Cell (757) 375-7056

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Please consider the environment before printing this email.

2 attachments

2020-5167 Eveland SCR Reimbursement Claim.pdf
2632K

2020-5167 Eveland SCR eAAF COST WORKSHEET.xlsx
38K

claim.decision@deq.virginia.gov <claim.decision@deq.virginia.gov> Wed, Nov 4, 2020 at 12:48 PM
To: tcoffey@hepaco.com, tcoffey@hepaco.com

Your message

To: tcoffey@hepaco.com
Subject: 2020-5167 Eveland SCR Reimbursement Claim
Sent: 11/4/20, 9:27:58 AM EST

was read on 11/4/20, 12:48:23 PM EST

PERMIT CLOSEOUT REPORT BLDC-20-0038

Permit Type	Building (Commercial)	**Project:**		**App Date:**	02/25/2020
Work Class:	Alteration	**District:**	Powhatan	**Exp Date:**	04/19/2021
Status:	Complete	**Square Feet:**	0.00	**Completed:**	10/19/2020
Valuation:	$331.33	**Assigned To:**	Soles, Theresa	**Issue Date:**	05/11/2020
Description:	MAKE REPAIRS TO BILLBOARD PER APPROVAL LETTER FROM VDOT				

Parcel:	1110100013	Main	**Address:**	101 Ivy Hill Rd Toano, VA 23168	Main

Zone:
- Toano(School - Middle School Zones)
- Mill Creek(AFD)
- Stonehouse(School - Elementary School
- Area outside the 1% or 0.2% annual flood
- Rural Lands(Comprehensive Plan 2045)
- RPA-2004 Revised(RPA)
- Warhill(School - High School Zones)
- Diascund Creek(NWBD Watershed Boun
- General Agricultural(Zoning)

Contractor
Keith Wagner
1908 Chamberlayne Ave
Richmond, VA 23222
Business: (804) 649-0325

Ownership information provided by the applicant. For legal ownership please refer to the County's Real Estate data

Permit Custom Fields
*Note: Blank fields do not appear in this report.

Waive Itemized Fees	Yes	Category	Sign structure	Number of Units	0
Number of Stories	0	Grinder Pump	No	Number of Wood Burning Fireplaces	0
Number of Gas Fireplaces	0	Floor Area Sq. Ft.	0	Deck Sq. Ft.	0
Porch Sq. Ft.	0	Garage Sq. Ft.	0	Basement Sq. Ft.	0
Total Sq. Ft.	0	Impervious Area (Acres)	0	Site Total Acreage	0
Disturbed Acres	0	Construction Type	V-B	Occupancy Classification(s)	U

Type of Hold	Created By	Date Created	Hold Origin	Comments	Active
RPA Alert	EnerGov Service	02/25/2020 11:55	BLDC-20-0038	This property contains Resource Protection Area (RPA).	No

Attachment File Name	Added On	Added By	Attachment Group	Notes
BLDC-20-0038 CONSTRUCTION DRAWINGS.pdf	05/11/2020 9:20	Smith, Marty	Available Online	
PM_Standard_Permit_Detailed_11-5-2020_10-02-54-176-AM_0.pdf	05/11/2020 10:02	Service, EnerGov	Available Online	Automatically attached from workflow.
JCC Closeout Report.pdf	10/19/2020 14:52	Service, EnerGov		Automatically attached from the workflow.

Inspection Number	Status	Inspection Type	Request Date	Scheduled Start Date	Scheduled End Date	Actual Start Date	Actual End Date

PERMIT CLOSEOUT REPORT (BLDC-20-0038)

Inspection Number	Status	Inspection Type	Request Date	Scheduled Start Date	Scheduled End Date	Actual Start Date	Actual End Date
IBLD-20-23962	Passed	Final Building	10/19/2020	10/20/2020 0:00	10/20/2020 0:00	10/19/2020 13:49	10/19/2020 13:49

Inspectors: Kirkpatrick, Laura (Primary)

Invoice No.	Fee	Fee Amount	Amount Paid
INV-00018859	Building Permit Fee (Valuation)	$52.50	$52.50
	State Levy	$1.05	$1.05
	Building Plan Review Fee	$15.75	$15.75
	Total for Invoice INV-00018859	$69.30	$69.30
	Grand Total for Permit	**$69.30**	**$69.30**

Activity Type	Activity Number	Name	Workflow Action Name	User	Created On
BSP Application Checklist	BSP-000841-2020		BSP Application Checklist v.1.00	Tom Nehez	02/27/2020

Activity Custom Fields

Business License Check (Commissioner of Revenue)	No	Construction Drawings	Yes	Contractor License Check (DPOR)	Yes
Date Received Construction Drawings	Feb 27 2020 12:00AM	Date Received Contractor License Check	Feb 27 2020 12:00AM	Date Received FEMA	Feb 27 2020 12:00AM
FEMA	Yes	Geotechnical Report	No	JCC Approved Site Plan	No
NA1	No	NA10	Yes	NA11	Yes
NA12	Yes	NA13	Yes	NA14	No
NA2	Yes	NA3	Yes	NA5	No
NA6	Yes	NA7	Yes	NA8	Yes
NA9	Yes	Owner"s Affidavit	No	Permit Agreement in Lieu of E&S/SW Mgmt. Plan.	No
Property Tax Check (Treasurer)	No	Residential Site Plan	No	Scope of Work Responsibility Matrix	No
Statement of Special Inspections	No	VDH Permits	No		

Workflow Step / Action Name	Action Type	Start Date	End Date
Application Completeness Check v.1		02/27/2020 0:00	02/27/2020 10:47
BSP Application Checklist v.1	Permit Activity	02/27/2020 0:00	02/27/2020 10:47
Review v.1		02/27/2020 0:00	05/11/2020 9:24
Building Review (Commercial) v.1	Receive Submittal	02/27/2020 0:00	03/17/2020 9:14
Building Review (Commercial) v.2	Receive Submittal	05/11/2020 0:00	05/11/2020 9:24
Issue Permit v.1		05/11/2020 0:00	05/11/2020 10:02
Collect Fees v.1	Generic Action		05/11/2020 10:02
Issue Permit v.1	Create Report	05/11/2020 0:00	05/11/2020 10:02
Final Inspections: Building v.1		10/19/2020 0:00	10/19/2020 13:49
Building - Final v.1	Inspection	10/19/2020 0:00	10/19/2020 13:49
Records Management v.1		10/19/2020 0:00	10/19/2020 14:51
Case Closed v.1	Generic Action		10/19/2020 14:51

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Building Review (Commercial) v.1	Requires Re-submit	02/27/2020	03/19/2020	03/17/2020	Yes	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
James City Service Authority	James City Service Authority	Plan Reviewer, JCSA	Approved	02/27/2020	03/19/2020	02/28/2020

PERMIT CLOSEOUT REPORT (BLDC-20-0038)

Submittal Name	Status	Received Date	Due Date	Complete Date	Resubmit	Completed
Building Review (Commercial) v.2	Approved	05/11/2020	05/18/2020	05/11/2020	No	Yes

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Stormwater & Resource Protection	Stormwater & Resource Protection	Woolson, Michael	Approved	02/27/2020	03/19/2020	03/02/2020

Comments: In right-of-way.

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
Deputy Zoning Administrator	Zoning	Costello, Terry	Approved	02/27/2020	03/19/2020	03/06/2020

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
BSP - Commercial Review	Building Safety & Permits	Smith, Marty	Requires Re-submit	02/27/2020	03/19/2020	03/17/2020

Comments: need drawing showing repair methods/construction details

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
BSP - Commercial Review	Building Safety & Permits	Smith, Marty	Requires Re-submit	02/27/2020	03/19/2020	03/17/2020

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
BSP - Commercial Review	Building Safety & Permits	Smith, Marty	Approved	05/11/2020	05/18/2020	05/11/2020

Item Review Name	Department	Assigned User	Status	Assigned Date	Due Date	Completed Date
BSP - Commercial Review	Building Safety & Permits	Smith, Marty	Approved	05/11/2020	05/18/2020	05/11/2020

PERMIT CLOSEOUT REPORT B-171580

Permit Type	Building (Commercial)	**Project:**		**App Date:**	07/11/2017
Work Class:	New Construction	**District:**		**Exp Date:**	04/22/2019
Status:	Void	**Square Feet:**	0.00	**Completed:**	08/14/2019
Valuation:	$320.00	**Assigned To:**		**Issue Date:**	07/11/2017
Description:	SIGN #255 AND #215				

Parcel:	**Address:**	**Zone:**
1110100013 Main	101 Ivy Hill Rd Main Toano, VA 23168-8808	

Owner
B SILVERMAN IVY HILL LLC
5 FARRINGDON ST
BALTIMORE, MD 21209-2507
Business: (443) 629-4514

Contractor
TALLEY SIGN COMPANY
1908 CHAMBERLAYNE AVE
ST
RICHMOND, VA 23222
Business: (804) 649-0325

Ownership information provided by the applicant. For legal ownership please refer to the County's Real Estate data

Permit Custom Fields

*Note: Blank fields do not appear in this report.

Waive Itemized Fees	No	Grinder Pump	No	Code Edition In Effect	2012

Attachment File Name	Added On	Added By	Attachment Group	Notes
B171580Recmgmt.pdf	03/06/2020 8:20	Miller, Clarissa		Permit Voided. Includes Application, Correspondence, Photos, etc.

Inspection Number	Status	Inspection Type	Request Date	Scheduled Start Date	Scheduled End Date	Actual Start Date	Actual End Date
441238	Rejected	Final Building	12/27/2017	12/27/2017 0:00	12/27/2017 0:00	12/27/2017 0:00	12/27/2017 0:00
	Inspectors: Wilkerson, Pat (Primary)						
IBLD-18-10323	Canceled	Final Building	10/22/2018	10/22/2018 0:00	10/22/2018 0:00	10/22/2018 14:17	10/22/2018 14:17
	Inspectors: Kirkpatrick, Laura (Primary)						
IBLD-19-21494	Canceled	Final Building	08/14/2019	08/14/2019 0:00	08/14/2019 0:00	08/14/2019 11:22	08/14/2019 11:22
	Comments: IP sch by AT--VOID if not started per AT						
	Inspectors: Kirkpatrick, Laura (Primary)						

Checklist Item	Description	Passed	Comments
General Comments		No	no correction of damage has even been done

Note	Created By	Date and Time Created
1. Initial Creation from Pop Applic Form	Pat Wilkerson	05/31/2017 15:00
2. MAKE REPAIRS TO BILLBOARD 2012 USBC	Pat Wilkerson	05/31/2017 15:01
3. MUST BE APPROVED BY THE COUNTY ATTORNEYS OFFICE BEFORE PERMIT MAY BE ISSUED.	Tom Coghill	06/07/2017 11:32
4. OK TO ISSUE PERMIT PER CO. ATTY.	Tom Coghill	07/03/2017 11:03
5. PLEASE LET TOM KNOW SO HE CAN NOTIFY CO. ATTY. WHE WE ISSUE THIS PERMIT AND WHEN INSPECTIONS ARE REQUESTED.	Tom Coghill	07/03/2017 11:04
6. 38 - Permit Trans Written	Legacy User	07/11/2017 15:47
7. Created from applic A-170957	Legacy User	07/11/2017 15:47
8. Permit Printed	Legacy User	07/11/2017 15:47
9. Inspection (Final) For Permit B-171580 NOT Approved --- Comments=Sched: RESULT: INACTIVE PERMIT INSPECTION	Pat Wilkerson	12/27/2017 11:21

PERMIT CLOSEOUT REPORT (B-171580)

10.	RENEWED PERMIT FOR 6 MOS. PAID $50 FEE 12/27/17 PS\	Pat Wilkerson	12/27/2017 11:22
11.	Subdivision: 71110 MAP 11-1 ACREAGE PARCELS	System Administrator	06/07/2018 18:20
12.	OK TO RENEW PERMIT FOR ANOTHER 6 MOS PER ADAM KINSMAN	Pat Wilkerson	12/20/2018 7:19
13.	WORK HAS NOT BEEN DONE AS OF 3/28/19	Laura Kirkpatrick	03/28/2019 15:03
14.	nothing as of 8/14/19 permit voided	Laura Kirkpatrick	08/14/2019 11:23

Invoice No.	Fee		Fee Amount	Amount Paid
INV-00000662	Permit Renewal or Extension Fee		$50.00	$50.00
		Total for Invoice INV-00000662	$50.00	$50.00
INV-00005430	Permit Renewal or Extension Fee		$52.50	$52.50
		Total for Invoice INV-00005430	$52.50	$52.50
INV-00010694	Permit Renewal or Extension Fee		$52.50	$52.50
		Total for Invoice INV-00010694	$52.50	$52.50
PERMIT-B-171580	Permit MinMax		$49.87	$49.87
	Minimum Plan Review Fee		$15.00	$15.00
	Permit Fee		$0.13	$0.13
	State Levy		$1.00	$1.00
		Total for Invoice PERMIT-B-171580	$66.00	$66.00
		Grand Total for Permit	**$221.00**	**$221.00**

Workflow Step / Action Name	Action Type	Start Date	End Date
Inspections v.1		07/11/2017 0:00	
Final - Building v.1	Inspection	12/27/2017 0:00	10/22/2018 7:20
Final - Building v.2	Inspection	10/22/2018 0:00	10/22/2018 14:18
Final - Building v.3	Inspection	08/14/2019 0:00	08/14/2019 11:23
Issue Permit v.1			
Collect Fees v.1	Generic Action		
Issue Permit v.1	Create Report		

SCANNER OPERATOR'S

CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF: JAMES CITY COUNTY RECORDS MANAGEMENT DEPARTMENT AND WERE SCANNED IN THE REGULAR COURSE OF BUSINESS ON THE DATE LISTED; AND PURSUANT TO ESTABLISHED GUIDELINES BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND THAT WHEN SCANNED THE RECORDS WERE IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

CASE NUMBER: B-171580 (BP-17-1580)

FILE CONTAINS: File has no CO, contains Documents & Other Color Informatio

DATE SCANNED: 3/4/2020

SCANNER OPERATOR: Clarissa Miller

LOCATION: **WILLIAMSBURG, VA.**

Application for Building Permit

Talley Sign

James City County VIRGINIA Jamestown 1607

Contractor Information

License No.: 2701025262A
Company Name: Talley Sign Co
Address: 1908 Chamberlayne Ave.
City: Richmond State: VA Zip: 23222
Phone No.: (804) 649-0325 Fax No. (804) 643-1721
Email Address: accounting@talleysign.com
Signature: Lori R Nunnally
Print Name: Lori R Nunnally

Owner Information

Name: Ivy Hill, LLC & B. Silverman
Address: 5 Farringdon Ct.
City: Baltimore State: MD Zip: 21209
Phone No.: (443) 629-4514 Fax No. (410) 484-4366
Email Address: NLightman@Comcast.net
X Signature: Ellen Lightman
X Print name: Ellen Lightman
Agent:
Print Name:

Description of Work: make repairs to billboard - see attachment for repairs being done - Permit # 29044 - Sign # 255 - See Approval letter from VDOT -

Location of Work 11-11-13

Tax Map No.: 1110100013
Street Address: 101 Ivy Hill Rd.
City: James City Co State: VA Zip:
Zone: Subdivision:

(For Commercial Projects Only)

Site Plan No. Date Approved:

Mechanic's Lien Agent

Name:
Address:
City: State: Zip:
Phone No.: ( ) Fax No. ( )

Building Safety & Permits Received MAY 30 2017 James City County

Building Information

Stories ____ No. Rooms ____ No. Baths ____ No. Bath Fix ____
No. Fireplaces ____ Type:
Exterior Finish: ☐vinyl ☐brick ☐wood ☐other
Interior Finish: ☐Gypsum ☐wallboard ☐wood ☐other
Flooring: ☐carpet ☐wood ☐vinyl ☐other
Roofing: ☐asphalt ☐fiberglass ☐wood ☐other
Heat Type: ☐gas ☐heat pump ☐electric ☐other
Air Conditioning Type: ☐central ☐window ☐none
Estimated Construction Value: $319.51
(Do not include Lot $) Repair Billboard

Floor Area (sq.ft.):
(Do not include Basement, Garage, and Deck/Porch)
Deck (sq.ft.):
Porch (sq.ft.):
Basement Area (sq.ft.):
Garage Area (sq.ft.):
Total Area (sq.ft.):
☐Public Sewer ☐Septic ☐Well ☐Grinder Pump
☐Public H_2O

OFFICE USE ONLY

Special Flood Hazard Area: Yes ☐ No ☑ Zone

Lot Width:
Lot Depth:
Front Property Line:
Right Property Line:
Left Property Line:
Rear Property Line:
PERMIT NO.: B17-1580
LINE NO.: A17-0957
Date/Time In: 5/31/17
Date Plan Reviewed: 6/7/17

Improvement Code: 38
Structure Used As: Sign
Occupancy Class: U
Occupancy Load: 0
Type Construction: VB
Zoning Approved:
Plan Approved: TC 7.3.17
PLAN REVIEW FEE:
PERMIT FEE:
ERP FEE:
VSMP FEE:
TOTAL: $66.00

Notes:
2012 USBC
NEEDS APPROVAL OF COUNTY ATTORNEY.
PLEASE ADVISE TOM SO HE CAN NOTIFY CO. ATTY. WHEN WE ISSUE THIS PERMIT & WHEN INSPECTIONS ARE REQUESTED.

Building Safety & Permits
Received
JUN 21 2018
James City County

Pat Wilkerson

From: permits@talleysign.com
Sent: Thursday, June 21, 2018 3:45 PM
To: Pat Wilkerson
Subject: Billboard Permit Renewal

Hi Pat,
Talley Sign is requesting a 6 month extension for permit # 17-1580 due to a delayed beginning of construction. Let me know if you need anything else. Thanks!

Jessica Sutherland | Permit Specialist
ph: (804) 649-0325
Talley Sign Company

Pat Wilkerson

From: Adam Kinsman
Sent: Wednesday, June 27, 2018 1:48 PM
To: Tom Coghill; Pat Wilkerson
Subject: RE: Billboard Permit Renewal

OK with me. Thanks, Pat and Tom. I would like to know when/if they ever do start work out there.

Adam

From: Tom Coghill
Sent: Friday, June 22, 2018 8:38 AM
To: Pat Wilkerson <Pat.Wilkerson@jamescitycountyva.gov>
Cc: Adam Kinsman <Adam.Kinsman@jamescitycountyva.gov>
Subject: Re: Billboard Permit Renewal

Yes, I am copying Adam to ask for guidance with respect to any legal issues.

Tom Coghill, CBO, CFM
Director of Building Safety & Permits
County of James City
101 Mounts Bay Rd., Building E
Williamsburg, VA 23185
office: (757) 253-6628
Cell: (757) 592-6190

On Jun 21, 2018, at 15:57, Pat Wilkerson <Pat.Wilkerson@jamescitycountyva.gov> wrote:

> *See request below to renew a sign permit. There are notes in HMS about informing Adam of the permit & inspections. Would he also need to know about a renewal request?*
> **Pat Wilkerson**
> **Administrative Services Coordinator**
> **Building Safety & Permits**
> **101-E Mounts Bay Road**
> **Williamsburg, VA 23185**
> **P: 757-259-4028**
> jamescitycountyva.gov
> Most permit requests and inquiries can now be handled online
> Visit JCC **Permit**link: http://www.jamescitycountyva.gov/permitlink
>
> **From:** permits@talleysign.com <permits@talleysign.com>
> **Sent:** Thursday, June 21, 2018 3:45 PM
> **To:** Pat Wilkerson <Pat.Wilkerson@jamescitycountyva.gov>
> **Subject:** Billboard Permit Renewal
> Hi Pat,
> Talley Sign is requesting a 6 month extension for permit # 17-1580 due to a delayed beginning of construction. Let me know if you need anything else. Thanks!
> Jessica Sutherland | Permit Specialist
> ph: (804) 649-0325

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
1401 EAST BROAD STREET
RICHMOND, VIRGINIA 23219-2000

Charles A. Kilpatrick, P.E.
Commissioner

May 16, 2017

Talley Sign Co.
Attention: Lori Nunnally
1908 Chamberlayne Ave.
Richmond, VA 23222

Re: Proposed Repair Estimate
Outdoor Advertising Permit: 29044
James City County, Route 60

Dear Ms. Nunnally:

This letter is in response to the recent repair request for the above referenced structure. This repair request indicates a replacement cost of the structure of $2,872.22 and proposed repair costs are $319.51. Because the proposed repairs are less than 50% of the replacement cost for the structure, the proposed repair estimate is approved. This approval is conditioned upon the final approval by the appropriate Building Official. Should he request changes to your scope of work, I will need to assess their impact on your cost comparison.

This approval is limited to assuring compliance with the cost requirements regarding proposed repairs to nonconforming billboards contained in Virginia Code §33.2-1219. Therefore, it is your sole responsibility to determine the structural integrity of the sign structure and appropriate uses of the referenced equipment and materials associated with this repair application.

Our agent, Bryant Cuffey, will forward this matter to the appropriate Building Official for their review and comment. If you have any questions or concerns, please contact Dwaine Ware at 434-841-3858 or by email at dwaine.ware@vdot.virginia.gov. Thank you for your assistance in this matter.

Sincerely,

Suzanne T. Ellison
Outdoor Advertising Program Manager

cc: Bryant Cuffey
Dwaine Ware
Mike Marr

Building Safety & Permits Copy

APPROVED FOR GENERAL CONFORMANCE TO THE 2012 USBC
DATE: 7.3.17 BY TC

MAY 19 2017

VDOT Replacement/Repair Form **All yellow sections must be completed, if applicable.**

Date: 5/11/17
Company: TALLEY SIGN CO.
Address: 1908 CHAMBERLAYNE AVE.
City: Richmond State: VA Zip: 23222
Contact Person: LORI NUNNALLY
Phone: 804-649-0325
Email: ACCOUNTING@TALLEYSIGN.COM
Permit Number: 29044 Area : 427 (SqFt)
Route: RT.60 Jurisdiction: JAMES CITY CO.

Checklist

- o List all material for the sign on replacement cost. (Exclude safety devices and concrete)
- o List the material for the repair. (Exclude safety devices and concrete)
- o Include vendor quotes for all material.
- o Include photos of the entire structure. (Include all bracing and supports)
- o Exclude labor and equipment cost

Materials Replacement Cost of the Billboard or Sign

	ITEM	Mat. Type	Description	Qty	Unit Amt	Amt.
1	Poles					
	Steel					
	Wood	WOODEN	30FT POLES	5	$ 137.00	$ 685.00
2	Face	TIFFIN PANELS	TIFFIN PANELS	1	$ 1,647.30	$ 1,647.30
	Additional face					
	Additional face					
3	Steel					
	Angle					
	Channel					
4	Lumber	WOOD	2 X 6 X 12'	20	$ 7.92	$ 158.40
	Lumber	WOOD	2 X 6 X 16'	3	$ 10.65	$ 31.95
	Apron- SKIRT	MDO-4X10 SH.	18" X 40'- 1/2" MDO BOARD	1.5	$ 90.38	$ 135.57
5	Electrical	N/A				
	Lights					
	Breaker Box					
	Smartlink					
	Other Electrical Components					
6	Hardware					
	Nails	NAILS	NAILS- 5 LB BOX	2	$ 16.78	$ 33.56
	Screws	CARRIAGE BOL	1/2" X 12" CARRIAGE BOLTS	20	$ 5.28	$ 105.60
	Bolts, Nuts, Washers	1/2" WASHERS	1/2" WASHERS-25 PACK	2	$ 8.38	$ 16.76
7	Other	NUTS	3/4" NUTS	48	$ 1.21	$ 58.08
						$ 2,872.22
					50.00%	$ 1,436.11

Materials Repair & Maintenance Costs

Description	Qty	Unit Amt
30' TELEPHONE POLE	1	$ 137.00
N/A		
2 X 6 X 12'	6	$ 7.92
2 X 6 X 16'	3	$ 10.65
N/A		
N/A		
NAILS - 5 LBS	1	$ 16.78
1/2" X 12" CARRIAGE BOLTS	12	$ 5.28
1/2" WASHERS-25 PACK	1	$ 8.38
3/4" NUTS	12	$ 1.21
		11.12%

See 2nd page For Total

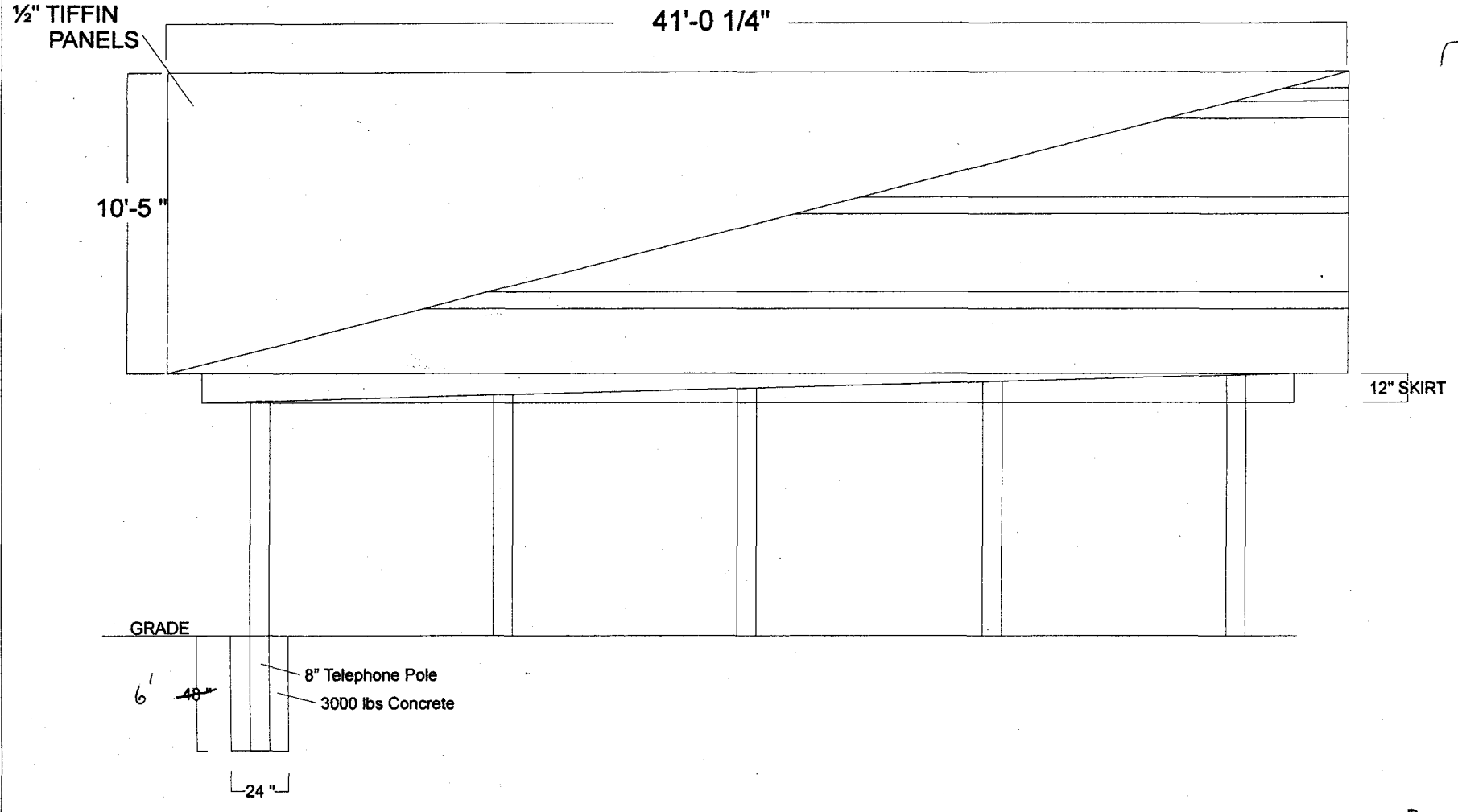
Amt.
$ 137.00
$ 47.52
$ 31.95
$ 16.78
$ 63.36
$ 8.38
$ 14.52
$ 319.51
$ 319.51





SIGN # 255 - To Make New

FRONT VIEW



TALLEY
SIGN COMPANY
ARCHITECTURAL & COMMERCIAL
1908 Chamberlayne Ave. P.O. Box 27386 Richmond, Va. 23261
Phone 804-649-0325 Fax 804-643-1721

CLIENT: Billboard (VDOT PERMIT)

DATE: 5/11/17 SCALE: 1/8"=1' JOB# #255

REP: Ed Doyle BY: RWS

LOC: Permit #29044

Notes:

This drawing is the property of Talley Sign Company. The undersigned agrees it shall not be reproduced, copied, or disposed of directly or indirectly, nor used for any other purpose without express permission of Talley Sign Company.

Name _____ **Date** _____

©Copyright 2007 by Talley Sign Company.

Lori Nunnally

From: Mark Chenault <mchenault@myrec.coop>
Sent: Monday, March 13, 2017 11:35 AM
To: Lori Nunnally
Subject: RE: [external sender] Quote for Telephone Poles

Lori,

Can give you an estimated cost on the following poles (should be close to cost) These prices are for each pole, no discount for large amounts .
30-6 poles : $ 137.00 + tax. Ea.

$ 137.00 x 5 = $ 685 + tax (estimate price)

Mac

From: Lori Nunnally [mailto:accounting@talleysign.com]
Sent: Friday, March 10, 2017 4:06 PM
To: Mark Chenault
Subject: [external sender] Quote for Telephone Poles

Mark,
I need to get a written quote for five (5) 30ft poles, approx. 8". Thank you for your help.

Lori Nunnally
Talley Sign Co.
1-804-649-0325

-Rappahannock Electric Cooperative Legal Disclaimer-

This message may contain confidential and/or proprietary information, and is intended for the person/entity to whom it was originally addressed. Any use by others is strictly prohibited.

Tiffin Metal Products
450 Wall Street, Tiffin, OH 44883
Phone: (800) 537-0983 Fax: (419) 447-8512
www.tiffinmetal.com

Quotation

KS031017C

Project: (1) 10'6" X 40' 9-13/16"W Vertical Face

Quoted By: Kylene Foster
Phone: 800-537-0983
Email: kfoster@tiffinmetal.com
Date Created: 03/10/2017
Expiration: 03/10/2017

Submitted To:
TALLEY SIGN COMPANY

1908 CHAMBERLAYNE
AVE
RICHMOND , VA 23222

F.O.B.	Ship Method:	Terms:

Line #	Part Number	Product	Description	Qty	UOM	Unit Price	Ext. Price
1	O1062813-3OOO	10'6"X28 13/16" W/3H		17	Ea.	$93.00	$1,581.00
2	1082	SLOTTED RIVET T-26		102	Ea.	$0.40	$40.80
3	1083	STEEL KEY T-27		102	Ea.	$0.25	$25.50

Freight Charge	**$515.00** – Do Not Include in Quote
Total Price	**$2,162.30**

Notes: LTL Freight is estimated and subject to change

Accepted By: _____ **Date:** _____

LIMITED WARRANTY

Tiffin Metal Products, Co. (TMP) warrants the good quality of the materials, workmanship and that its products are merchantable and fit for their intended purpose. This Limited Warranty expires of one (1) year after the date of product purchase. TMP does not provide any other express or implied warranties of any kind or nature. There are no warranties which extend beyond the description on the face of this Limited Warranty. The terms, conditions and operations of this Limited Warranty are available upon request prior to purchase.

FREE SHIPPING ON QUALIFYING ORDERS $49 OR MORE

Open until 9PM!
Central Richmond Lowe's ⌄

Prices, promotions, styles, and availability may vary. Our local stores do not honor online pricing. Prices and availability of products and services are subject to change without notice. Errors will be corrected where discovered, and Lowe's reserves the right to revoke any stated offer and to correct any errors, inaccuracies or omissions including after an order has been submitted.

Top Choice (Common: 2-in x 6-in x 12-Ft; Actual: 1.5-in x 5.5-in x 12-ft) Pressure Treated Lumber

Item # 468936 **Model #** 2612P

★★★½☆ **(17 Reviews)**



Product is sold in individual pieces; please review the product specifications for details

$7.92

− 1 + ADD TO CART

♡ SAVE | SHARE

FREE Store Pickup

- 98 available today at Central Richmond Lowe's!

Aisle 20 , **Bay** 22

In-Store Map

Delivery

- Delivery available as soon as tomorrow!

CHECK OTHER STORES

FREE SHIPPING ON QUALIFYING ORDERS $49 OR MORE

Open until 9PM!
Central Richmond Lowe's ⌄

Prices, promotions, styles, and availability may vary. Our local stores do not honor online pricing. Prices and availability of products and services are subject to change without notice. Errors will be corrected where discovered, and Lowe's reserves the right to revoke any stated offer and to correct any errors, inaccuracies or omissions including after an order has been submitted.

Top Choice (Common: 2-in x 6-in x 16-Ft; Actual: 1.5-in x 5.5-in x 16-ft) Pressure Treated Lumber

Item # 468937 **Model #** 2616P

★★★★½ **(10 Reviews)**



Product is sold in individual pieces; please review the product specifications for details

$10.65

− 1 + ADD TO CART

♡ SAVE | SHARE

FREE Store Pickup

- 125 available today at Central Richmond Lowe's!

Aisle 20 , **Bay** 22

In-Store Map

Delivery

- Delivery available as soon as tomorrow!

CHECK OTHER STORES



800-345-1712
sales@harborsales.net

QUOTE

Expires 05/21/2017

BILL TO: Sandra Lawson
TALLEY SIGN CO
1908 CHAMBERLAYNE AVENUE
RICHMOND, VA 23222
Phone: (804)649-0325

JOB:

Customer # 2508

SHIP TO:
TALLEY SIGN CO
1908 CHAMBERLAYNE AVE
RICHMOND, VA 23222
Phone: (804)649-0325

Customer PO#	Order Date	Terms	Tax Number	F.O.B.	Shipping Via	Shipping Date
	05/01/2017	1/15 N30	0014660992	Sudlersville	Harbor Truck	05/08/2017

Quantity	Item	Bin	SKU	Price Ea.	Extension
11	4' x 10' x 1/2" (5 ply) | 2 Side | Primed Pre-Primed MDO Sign/Industrial - Exterior	Ing	41012MDO2SG	$90.38	$994.18
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00
					$0.00

Shipping Date: 05/08/17 **Route:** 7 Driver: Shelby

Order weight #682.00 **Discounts on this order saved you $62.37**

Order Date: 05/01/2017 15:58 By: T

Order SubTotal	$994.18
Shipping	$0.00
Tax (VA 0.00%)	$0.00
Order total	**$994.18**
Amt paid	$0.00
Balance Due	**$994.18**

....QUOTATION ONLY....QUOTATION ONLY....QUOTATION ONLY....

Any changes to this quotation will result in price changes. Stock availability will vary based on the date you place your order!

QUOTATION: 1999395- Expires on 05/21/2017

FREE SHIPPING ON QUALIFYING ORDERS $49 OR MORE

Open until 9PM!
Central Richmond Lowe's ⌄

Prices, promotions, styles, and availability may vary. Our local stores do not honor online pricing. Prices and availability of products and services are subject to change without notice. Errors will be corrected where discovered, and Lowe's reserves the right to revoke any stated offer and to correct any errors, inaccuracies or omissions including after an order has been submitted.

Grip-Rite 5-lb Box 9-Gauge 3.5-in Hot-Dipped Galvanized Wood Deck Nails

Item # 69928 **Model #** 16HGSTPD5

★☆☆☆☆ **(1 Review)**



Brands may vary by store

$16.78

− 1 + ADD TO CART

♡ SAVE | SHARE

FREE Store Pickup

- 10 available today at Central Richmond Lowe's!

Aisle 16 , **Bay** 25

In-Store Map

CHECK OTHER STORES

Shipping & Delivery

- Available!

CHAT WITH LOWE'S

FREE SHIPPING ON QUALIFYING ORDERS $49 OR MORE

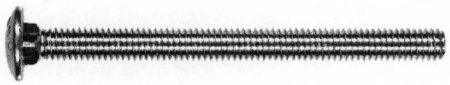
Open until 9PM!
Central Richmond Lowe's ⌄

Prices, promotions, styles, and availability may vary. Our local stores do not honor online pricing. Prices and availability of products and services are subject to change without notice. Errors will be corrected where discovered, and Lowe's reserves the right to revoke any stated offer and to correct any errors, inaccuracies or omissions including after an order has been submitted.

Deck Plus 1/2-in x 12-in Coated Carriage Bolt

Item # 756077 **Model #** 260848

☆☆☆☆☆ **No reviews**



$5.28

− 1 + ADD TO CART

♡ SAVE | SHARE

FREE Store Pickup

- 20 available today at Central Richmond Lowe's!

Aisle 16 , **Bay** 6

In-Store Map

Shipping & Delivery

- Available!

CHECK OTHER STORES

FREE SHIPPING ON QUALIFYING ORDERS $49 OR MORE

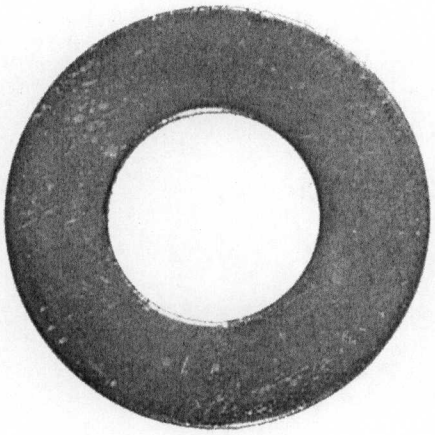
Open until 9PM!
Central Richmond Lowe's ⌄

Prices, promotions, styles, and availability may vary. Our local stores do not honor online pricing. Prices and availability of products and services are subject to change without notice. Errors will be corrected where discovered, and Lowe's reserves the right to revoke any stated offer and to correct any errors, inaccuracies or omissions including after an order has been submitted.

Project Pak 25-Count 1/2-in x 1-in Galvanized/Un-Coated Standard (SAE) Flat Washer

Item # 41762 **Model #** 492026

☆☆☆☆☆ **No reviews**



$8.38

− 1 + ADD TO CART

♡ SAVE | SHARE

FREE Store Pickup

Unavailable for Pickup at Central Richmond Lowe's

Shipping

Available!

CHECK OTHER STORES

LOWE'S PROJECT SERVICES CAN HELP WITH INSTALLATIONS, REMODELS AND MORE. GET STARTED >

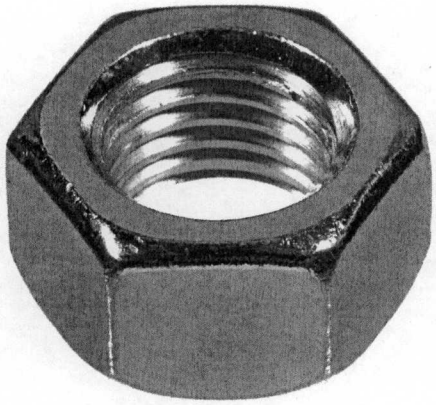
Open until 9PM!
Central Richmond Lowe's ⌄

Prices, promotions, styles, and availability may vary. Our local stores do not honor online pricing. Prices and availability of products and services are subject to change without notice. Errors will be corrected where discovered, and Lowe's reserves the right to revoke any stated offer and to correct any errors, inaccuracies or omissions including after an order has been submitted.

The Hillman Group 3/4-in Zinc-Plated Standard (SAE) Hex Nut

Item # 135670 **Model #** 880147

☆☆☆☆☆ **No reviews**



$1.21

− 1 + ADD TO CART

♡ SAVE | SHARE

FREE Store Pickup

- 33 available today at Central Richmond Lowe's!

Aisle 16 , **Bay** 6

In-Store Map

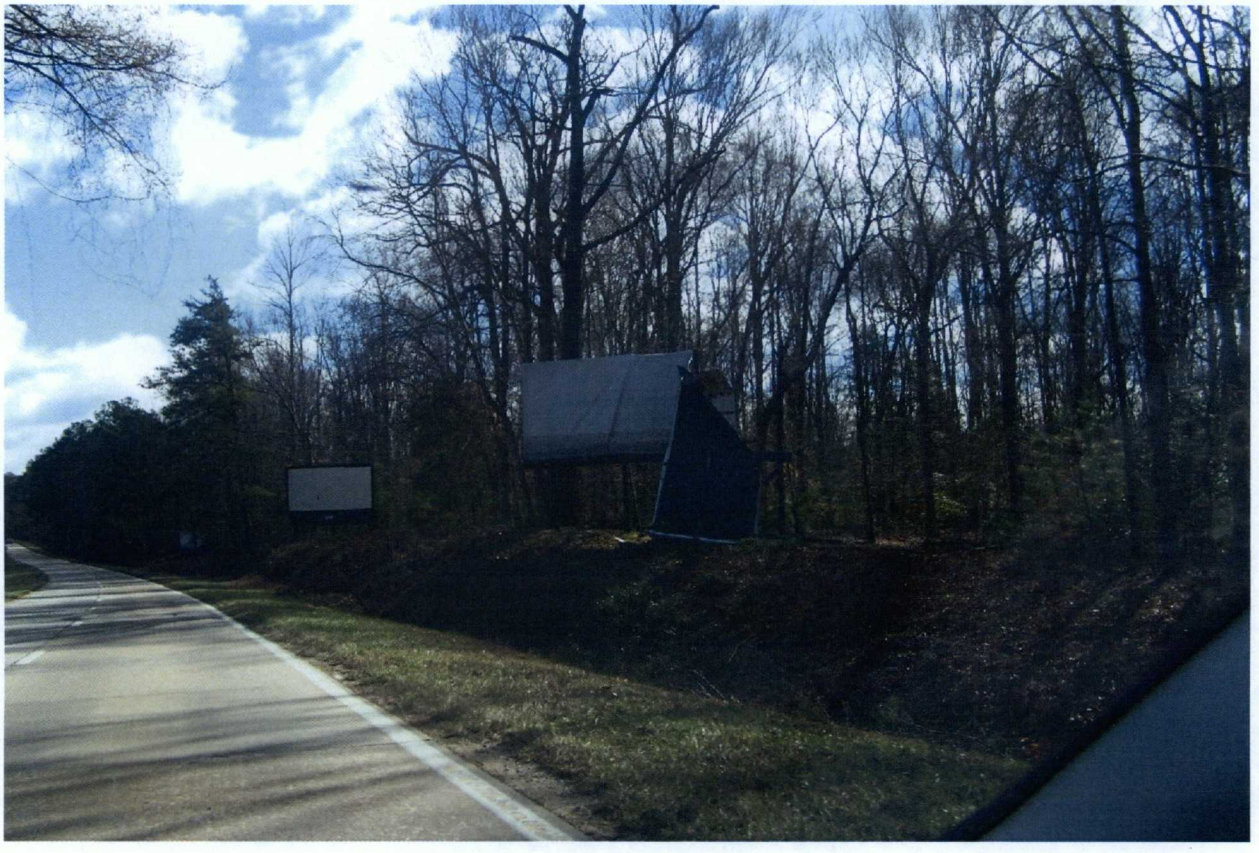
Shipping & Delivery

- Available!

CHECK OTHER STORES

This billboard is located on Route 60 East between Christ Community Church and James City Recycling. I believe the address is 101 Ivey Hill Road. Photo taken February 9, 2017



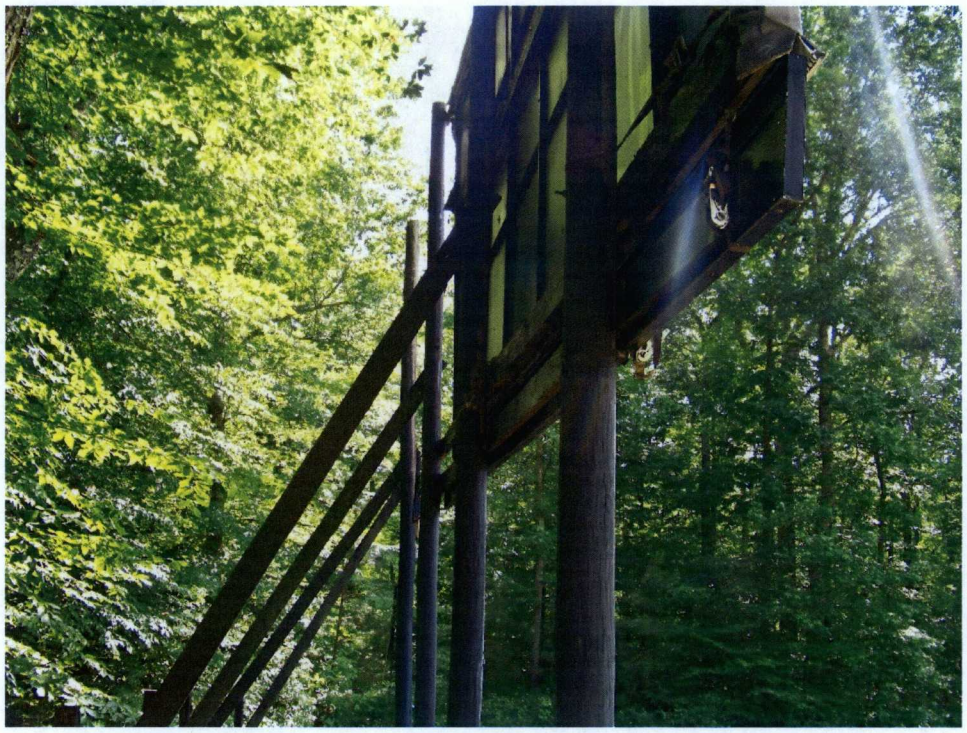


Building Safety
& Permits Copy



Photos below taken June 6, 2017






255














VA

17-1580

TALLEY
SIGN COMPANY
ARCHITECTURAL & COMMERCIAL

December 19, 2017

Pat Wilkerson
Code Compliance
James City County, VA
P.O. Box 8701
Williamsburg, VA 23187

To Mrs. Wilkerson,

This letter is to request an extension on our building permit (B17-1580). We have not been able to start the project.

Please let me know if we can have it extended out for six (6) months. My contact information is below.

Sincerely,

Lori R Nunnally

Lori Nunnally
Talley Sign Company
804-649-0325
accounting@talleysign.com

Permit

No>>> 171580 Search

Accy | Print | New | Locate | Save | Exit | Help | < | > | Capt | Dupe

PermitNo: B-171580

Address: 101 | | | IVY HILL ROAD | | TaxMap: 1110100013 | SubDiv: 71110 MAP 11-1 ACRE | SameAs | Owner: B SILVERMAN IVY HI

Type: SIGN | Status: Active | SitePlan: 0 | Soil | OwnerPhone: 443() 6) 29--4514

View Tickets

TALLEY SIGN COMPAN	11-Jul-2017		(804) 649-0325
SIGN	[B-171580]	[38]	C$
[B] Permit Date	7/11/2017		
[B] Masonry FP Roughin			
[B] Footing			
[B] Concrete Encased El			
[B] Foundation - 1			
[B] Foundation - 2			
[B] Concrete Slab			
[B] Framing			
[B] Air Barrier			
[B] Insulation			
[B] Final			
[B] Compaction			
[B] Dampproofing			
[B] Masonry FP Final			
[B] Prefab FP Roughin			
[B] Prefab FP Final			
[B] E and S Control			

Application Notes

PLAN=
ZONING=
ENVIRON=

Permit Notes

MAKE REPAIRS TO BILLBOARD 2012 USBC
MUST BE APPROVED BY THE COUNTY ATTORNEYS OFFICE
BEFORE PERMIT MAY BE ISSUED.
OK TO ISSUE PERMIT PER CO. ATTY.
PLEASE LET TOM KNOW SO HE CAN NOTIFY CO. ATTY. WHEN WE
ISSUE THIS PERMIT AND WHEN INSPECTIONS ARE REQUESTED.

Pat Wilkerson

From: Adam Kinsman
Sent: Thursday, December 21, 2017 8:43 AM
To: Pat Wilkerson
Subject: RE: Billboard Sign at 101 Ivy Hill Rd.

Thank you, Pat!

I have no problem with the extension. I suspect that they are going to use more new material than they've indicated in the permit, but we will see when it happens!!

Adam

-----Original Message-----
From: Pat Wilkerson
Sent: Thursday, December 21, 2017 8:29 AM
To: Adam Kinsman <Adam.Kinsman@jamescitycountyva.gov>
Cc: Tom Coghill <Tom.Coghill@jamescitycountyva.gov>
Subject: Billboard Sign at 101 Ivy Hill Rd.
Importance: High

Adam,
Please see Talley's attached letter asking for permission to renew their permit for the billboard sign at 101 Ivy Hill Rd. Because of the notes in HMS I did not want to renew it without someone's permission. Tom is out on sick leave but I am copying him on this e-mail as well.

Pat Wilkerson
Administrative Services Coordinator

PO Box 8784
101 Mounts Bay Road, Building E
Williamsburg, VA 23185
Pat.Wilkerson@jamescitycountyva.gov
P: 757-259-4028
F: 757-259-4038
Jamescitycountyva.gov

-----Original Message-----
From: WorkCentre 5335 [mailto:BLDG_E_Xerox@jamescitycountyva.gov]
Sent: Thursday, December 21, 2017 8:27 AM
To: Pat Wilkerson <Pat.Wilkerson@jamescitycountyva.gov>
Subject: Scan from a Xerox WorkCentre

Please open the attached document. It was scanned and sent to you using a Xerox WorkCentre.

Number of Images: 2
Attachment File Type: PDF

BUILDING PERMIT

James City County
Williamsburg, Virginia

Permit No: B17-1580

TAX MAP NO: 1110100013

X-Reference Permit			
Location	101 IVY HILL ROAD	Owner's Last Name:	B SILVERMAN IVY HILL LLC
SubDivision	71110 MAP 11-1 ACREAGE PARC	First Name:	
Contractor's Name	TALLEY SIGN COMPANY	Date:	11-Jul-2017
State License No	025262A	PIN: 26158	Type Improvement: SIGN
Use Group	U	Soil:	Site Plan No:
Use of Structure	SIGN		Occupancy Load 0 Type Construction VB
Lot Dimensions Length:		Width:	Water: None Sewer: None
Setbacks: Rear Yard:		Front Yard	Side Left: Side Right:

James City County
Building Safety & Permits
JUL 11 2017
PAID SM

Mechanic's Lien Agent | Same As (If Any)

Valuation Of Work:	$320.00
Permit Fee:	$50.00
Plan Review Fee:	$15.00
Other Fees Due:	$0.00
State 2% Levy:	$1.00
TOTAL:	$66.00

99 12/2/19 Tom Coghill

Tom Coghill

Office Copy

C000160-052424 - Public Records Request

Message History (3)

On 5/28/2024 9:57:14 AM, James City County Public Records Center wrote:

Subject: [Records Center] Public Records Request :: C000160-052424
Body:

May 28, 2024

RE: PUBLIC RECORDS REQUEST of May 24, 2024, Reference # **C000160-052424**

Dear Trevor Celata,

James City County Public Records Department received a public records disclosure request from you on May 24, 2024. In summary, you have asked for a copy of:

"I am requesting any building permit records for two parcels, Parcel ID# 1110100013 and 1110100024."

We were able to locate all corresponding records. Please log in to the James City County Public Records Center by clicking the following link to "My Request Center" to retrieve the appropriate responsive documents.

Please be advised that no records have been withheld from the response. If you have any questions, or wish to discuss this further, please contact me.

Sincerely,

Ania Eckhardt
FOIA Officer
County Administration
(757) 253-6602

On 5/24/2024 11:42:25 AM, James City County Public Records Center wrote:

Dear Trevor Celata:

This office is in receipt of your request for records made in accordance with the Virginia Freedom of Information Act (§ 2.2-3700 et. seq.).

Receipt Date: May 24, 2024

Reference Number: C000160-052424

Please allow five working days to process the request. Should we require additional time, we will inform you in writing. If there are fees associated with your request, we will inform you in writing prior to processing.

Records Requested: "I am requesting any building permit records for two parcels, Parcel ID# 1110100013 and 1110100024."

You can monitor the progress of your request at the link below and you will receive an email when your request has been completed. Please note that Virginia Freedom of Information Act record request is a request for existing documents and does not require a governmental body to create new information, to do legal research, or to answer questions.

Sincerely,

James City County FOIA Officer

To monitor the progress or update this request please log into the James City County Public Records Center

On 5/24/2024 11:42:24 AM, Trevor Celata wrote:

Request Created on Public Portal

C000159-052424 - Public Records Request

Message History (3)

On 5/28/2024 9:58:16 AM, James City County Public Records Center wrote:

Subject: [Records Center] Public Records Request :: C000159-052424
Body:

May 28, 2024

RE: PUBLIC RECORDS REQUEST of May 24, 2024, Reference # **C000159-052424**
Dear Trevor Celata,

James City County Public Records Department received a public records disclosure request from you on May 24, 2024. In summary, you have asked for a copy of:

"I am requesting an environmental pollution records, such as pollution complaints, leaking tanks, and petroleum releases for two parcels, Parcel ID# 1110100013 and 1110100024."

James City County Public Records Department has reviewed its files and has determined there are no responsive documents to your request.

If you have any questions, or wish to discuss this further, you may contact my office at (757) 253-6602.

Sincerely,

Ania Eckhardt
FOIA Officer
County Administration
(757) 253-6602

On 5/24/2024 11:40:37 AM, James City County Public Records Center wrote:

Dear Trevor Celata:

This office is in receipt of your request for records made in accordance with the Virginia Freedom of Information Act (§ 2.2-3700 et. seq.).

Receipt Date: May 24, 2024

Reference Number: C000159-052424

Please allow five working days to process the request. Should we require additional time, we will inform you in writing. If there are fees associated with your request, we will inform you in writing prior to processing.

Records Requested: "I am requesting an environmental pollution records, such as pollution complaints, leaking tanks, and petroleum releases for two parcels, Parcel ID# 1110100013 and 1110100024."

You can monitor the progress of your request at the link below and you will receive an email when your request has been completed. Please note that Virginia Freedom of Information Act record request is a request for existing documents and does not require a governmental body to create new information, to do legal research, or to answer questions.

Sincerely,

James City County FOIA Officer

To monitor the progress or update this request please log into the James City County Public Records Center

On 5/24/2024 11:40:32 AM, Trevor Celata wrote:

Request Created on Public Portal

James City County
101 Mounts Bay Road Williamsburg, VA
23185

Permit

Permit NO. **BLDC-20-0038**
Permit Type: **Building (Commercial)**
Work Classification: **Alteration**
Permit Status: **Issued**

Issue Date: 05/11/2020

Expiration: 11/09/2020

Location Address | **Parcel Number**

101 IVY HILL RD, Toano, VA 23168 | **1110100013**

Contacts

Jessica Sutherland — **Contractor**
1908 Chamberlayne Ave, Richmond, VA 23222
(804)649-0325 permits@talleysign.com

Description: MAKE REPAIRS TO BILLBOARD
PER APPROVAL LETTER FROM VDOT

Valuation:	**$331.33**
Total Sq Feet:	**0.00**

Inspection Requests:
Inspection_Phone

Fees	Amount
Building Permit Fee (Valuation)	$52.50
Building Plan Review Fee	$15.75
State Levy	$1.05
Total:	**$69.30**

Payments	Amt Paid
Total Fees	**$69.30**
Check # MgsHwLBUxjMk	$69.30
Amount Due:	**$0.00**

When construction reaches a stage of completion that requires an inspection, the permit holder shall notify the building official (USBC Section 113.1.2).

Issued By: Theresa Soles — May 11, 2020

Date

Permit_Signature_1 — Date

Permit_Signature_2 — Date

Virginia Department of Health

Request Visibility: Unpublished

Request 24-7190 Closed

2 of 12

Dates

Received

May 24, 2024 via web

Requester

Trevor Celata

trevor.celata@kimley-horn.com

2035 Maywill St, Suite 200, Richmond, VA, 23230

8044958605

Kimley-Horn

Additional information

GPIN (optional)

No data entered

County (for requests seeking well and septic information; only one county per request)

James City County

Invoices

No invoices due

Staff assigned

Departments

Local Health District: Peninsula Health District: James City County

Request

I am requesting any information and records pertaining to groundwater wells and/or septic system installation on Parcel ID# **1110100013 and 1110100024 in James City County.**

The target parcels are located within the Peninsula local health district.

Thank you,

Timeline Documents

Request closed

Public

The records cannot be found.

June 12, 2024, 3:57pm by Staff

Message to requester

Requester + Staff

Dear Requester,

This is in response to your FOIA request submitted to the Virginia Department of Health (VDH).

VDH does not have any documents responsive to your request. Please contact us if you have any questions so that we can assist you in making a focused and effective request that reasonably describes an identifiable record.

Sincerely,

Virginia Department of Health

June 12, 2024, 3:57pm by Staff

Message from requester

Requester + Staff

Good afternoon,

Is there an update regarding this request?

Susan Reith

Thank you

June 12, 2024, 2:39pm by the requester

Message to requester

Requester + Staff

Hello,

This will acknowledge receipt of your Virginia Freedom of Information Act request dated May 24, 2024, which was received by the Virginia Department of Health (VDH) on May 24, 2024.

Because of the time required to search for, compile and review responsive documents, it is not practically possible for VDH to respond to your request within five working days of receipt of the request. Therefore, pursuant to § 2.2-3704(B)(4) of the Code of Virginia, VDH is invoking a seven-workday extension. VDH's deadline for responding to your request is now June 12, 2024.

Please let us know if you have any questions.

Sincerely,

Virginia Department of Health

June 4, 2024, 12:05am by Staff

Message to requester

Requester + Staff

Thank you for your Virginia Freedom of Information Act (FOIA) Request submitted to the Virginia Department of Health (VDH). This will acknowledge receipt of your FOIA request. VDH will respond to your request within the required time frame.

VDH may make reasonable charges not to exceed its actual cost incurred in accessing, duplicating, supplying, or searching for the requested records and shall make all reasonable efforts to supply the requested records at the lowest possible cost. VDH will provide a cost estimate in advance upon request.

Additional information on FOIA policy can be found here.

Sincerely,

Virginia Department of Health

May 24, 2024, 11:19am

Request received via web
May 24, 2024, 11:19am by the requester

APPENDIX E

Katie Crum, CPWD

PROFESSIONAL CREDENTIALS

Bachelor of Art, Earth and Environmental Science, Virginia Wesleyan College, Norfolk, Virginia, 2003
Virginia Certified Professional Wetland Delineator

SPECIAL QUALIFICATIONS

- Specializes in managing the investigations, technical studies and evaluations, environmental analysis and documentation, and permitting for various types of private development and public infrastructure projects.
- Manages and performs due diligence investigations and studies to identify environmental constraints and considerations which may affect the project's usable area, design, schedule or budget.
- Manages and prepares Phase I Environmental Site Assessments (ESA), corridor assessments, and reviews for environmentally impacted properties.
- Coordinates and strategizes with the client to develop a plan to proactively manage the environmental requirements of a project and permitting approach.
- Follows various federal and state environmental regulations and programs.
- Coordinates with federal and state regulatory agencies.
- Subject matter expert in conducting wetland assessments and delineations in accordance with the methods outlined in the USACE 1987 Wetland Delineation Manual and Regional Supplement.
- Prepares applications for impacts to wetlands and surface waters and manages the permitting process with the USACE and state and advisory agencies.
- Manages and prepares document production and supporting technical studies for NEPA documents prepared for federally funded transportation projects.

PROJECT EXPERIENCE

Bedington Solar, Berkeley County, WV – Project Manager
Kimley-Horn is providing civil and environmental services for the development of the Bedington Solar project, a proposed 100-megawatt (MW) facility of clean renewable energy located on ±830 acres of land located near the Potomac River in Berkeley County, WV. A portion of the project site is part of a brownfield redevelopment of the former Chemours Potomac River Works Facility which manufactured various explosives beginning in the 1950s through the early 1990s. The project site is also located within karst terrain. Kimley-Horn's services include site visits, preliminary erosion and sediment control design, stormwater analysis, access road design, substation coordination, and alternatives analysis. Our environmental services have included managing mist net surveys for bat species, conducting threatened and endangered species reviews and consultation with USFWS, and preparing applications for permits from the USACE and state. We have collaborated internally to identify environmental site constraints and develop a design that can qualify for Nationwide Permits from the USACE to minimize the permitting schedule and compensatory mitigation costs. In addition, the Kimley-Horn team is assisting the client with review of site history, RCRA Corrective Action Permit, solid waste management units, and groundwater well locations to inform avoidance areas, understand development implications and environmental requirements, and determine design modifications to address environmental constraints. Responsibilities: Managing and preparing environmental investigations and studies.

Katie Crum, CPWD

Rocky Ford Solar, Henry County, VA – Project Manager
Kimley-Horn is providing environmental diligence and design services for a 90 MW solar generation facility located on over 600 acres in Henry County, VA. Our assistance began with a Critical Issues Analysis (CIA), Tier 1 Preliminary Site Evaluation & Tier 2 Site Characterization Report, wetland delineation, and Phase I ESA. As the project evolved, the Kimley-Horn team prepared a concept development plan for Invenergy's application submittal, conducted Terrain Analysis and Earthwork Exhibits to help Invenergy optimize the tracker and pile reveals for the site, and prepared full civil site plans for submission to Henry County. Kimley-Horn has strategized with the Invenergy team aspects of the project to avoid and minimize impacts to wetlands and streams. In addition, Kimley-Horn prepared the Environmental Assessment and Environmental Justice Analysis for the application to the State Corporation Commission. Responsibilities: Managing and preparing environmental investigations and studies.

Spotsylvania Solar Energy Center, Spotsylvania, VA – Project Manager
Kimley-Horn assisted our client with the design of a monumental solar project consisting of a solar generation facility on ±6,350 acres. Our scope included due diligence investigations, Phase I ESA, threatened and endangered species studies and coordination, wetland delineation of more than 7,000 acres, wetland permitting, Resource Protection Area buffer delineation, State Corporation Commission (SCC) permitting assistance, local entitlements, and civil engineering design services of this 500 MW ground-mounted single-axis tracker solar photovoltaic site. Responsibilities: Managed environmental due diligence investigations and permitting.

Weyburn, Virginia Beach, VA – Project Manager
Kimley-Horn and Associates, Inc. provided environmental due diligence and permitting services for the Weyburn development consisting of a residential subdivision comprised of 86 single family units and associated infrastructure including two access points via Salem Road, a ±1.6-acre community park, two stormwater ponds totally ±3.65 acres, ±3.2 acres of reserved open space, and a walking trail. Responsibilities: Managed preparation of the Phase I ESA and Phase II sampling and reporting, wetland delineation, and Joint Permit Application. Coordinated with various agencies for review and permit issuance.

198 Webster Street and 205 Brightwood Avenue, Hampton, VA – Project Manager
Kimley-Horn and Associates, Inc. provided environmental due diligence services for property acquisition purposes for two parcels located in Hampton. Responsibilities: Managed preparation of the Phase I ESA and Phase II sampling and reporting.

325 E. Belt Boulevard, Richmond, VA – Project Manager
Kimley-Horn and Associates, Inc. provided environmental consulting services for environmental due diligence, NEPA documentation, and environmental compliance for the acquisition of a 4-ac site located in Richmond. Greater Richmond Transit System (GRTC) purchased the project site for future development. Responsibilities: Managed preparation of the Phase I ESA, Phase II sampling, and Categorical Exclusion for compliance with FTA requirements.

Trevor Celata

Environmental Analyst

Trevor performs Phase I Environmental Site Assessments (ESAs). He performs environmental due diligence and generates reports detailing findings. Trevor also assists in performing wetland delineations, conducts Stormwater Pollution Prevention Plan (SWPPP) audits and erosion and sediment control inspections. He is experienced in GIS, inputting, creating, and analyzing layers of data, and generating project figures.

Professional Credentials

Bachelor of Science, Water: Resources, Policy, and Management, Virginia Polytechnic Institute and State University, 2022

Specialized Training

- VDEQ Certified Erosion and Sediment Control Inspector
- VDEQ Certified Stormwater Management Inspector
- VDEQ Certified Erosion and Sediment Control Program Administrator
- VDEQ Certified Stormwater Management Program Administrator

APPENDIX O: DECOMMISSIONING REPORT AND CALCULATIONS

Enclosed.

Kimley»Horn

September 30, 2024

James City County
Community Development Department
101 Mounts Bay Road
Building A
Williamsburg, VA 23185

RE: ***Hedera Solar, LLC – Decommissioning Cost Opinion***
Kimley-Horn #113526017

Dear Members of the Community Development Department:

The purpose of this letter is to provide a brief summary of Kimley-Horn's experience with solar energy facilities, the preparation of decommissioning costs associated with these facilities, and an overview of our methodology.

Kimley-Horn has experience providing consultation on more than 55 GW of solar energy development across the country, ranging in size from <1 MW to over 500 MW. Many of these solar facilities are in North Carolina and Virginia.

There is little current data available regarding the actual costs to decommission a solar facility because there have been few (if any) decommissioned since the average expected life span of a solar facility is approximately 35 years. However, we have combined our extensive experience in estimating sitework construction costs with the experience of our solar energy clients in the construction of all aspects of these facilities to develop quantifiable and defendable unit costs.

Quantities for this decommissioning cost opinion were estimated using the preliminary site plan for Hedera Solar.

At the time of decommissioning, the owner of the solar farm will issue RFP's (Request for Proposals) to Recycling/Restoration companies to provide their bid to restore the site to its original conditions and sell the items of value to recyclers and dispose of items with no value in a landfill. It is recommended that the decommissioning cost opinion to be updated every five years to keep a current estimate. For that reason, this cost opinion was performed assuming decommissioning in Year 5. The cost opinion for Year 5 shows that the net cost to decommission the site is $232,023.37. Additionally, with assumed inflation of 3.2% per year over the next 5 years, the net cost to decommission the site would increase to $272,918.73. Please see the attached Decommissioning Cost Opinion.

Please contact me at (804) 673-3882 or Nicholas.Robertson@kimley-horn.com should you have any questions or concerns.

Sincerely,
KIMLEY-HORN



Nicholas Robertson, PE, PMP

HEDERA SOLAR, LLC
DECOMMISSIONING PLAN
September 2024

Purpose

This decommissioning plan is provided by Hedera Solar, LLC (the "Project Company") and will detail the projected decommissioning demands associated with the proposed project.

The purpose of this decommissioning plan is to provide procedures and an opinion of probable construction cost for partial or full closure of the solar facility. County Code requires a decommissioning plan and performance guarantees to supplement plans submitted as part of a SUP package. This decommissioning plan details provisions for facility deconstruction and site restoration. This decommissioning plan shall take effect upon facility abandonment, discontinuation of operation, or expiration of the use permit as defined by County Code.

Site Location

Hedera Solar, LLC proposes to build a photovoltaic (PV) solar facility ("Solar Facility") with a nameplate capacity of approximately 3 MW_{AC} ("Project"), in James City County, Virginia. The Facility is located off of Richmond Road and within tax parcel identification number 1110100013 ("Property").

Anticipated Service Life of the Project

Unless the system is purchased by another entity, the facility shall be decommissioned in accordance with this Decommissioning Plan ("Plan"), restoring the site to as close to its agreed-upon post-decommissioned state as practicably possible upon expiration or termination of the Power Purchase Agreement. The Solar Facility will have a maturity date of twenty (20) years but carries an expected useful lifetime of more than 30 years.

Decommissioning responsibilities include the removal of: any perimeter fences, any concrete or steel foundations, all metal structures (mounting racks and trackers), all photovoltaic (PV) modules, pipelines, alternators, generators, aboveground and underground cables, transformers, inverters, fans, switch boxes, fixtures, etc. and otherwise restoring the premises to its original position or mutually agreed upon state. Other Plan activities include the management of materials and waste, projected costs, and a decommissioning fund agreement overview.

Decommissioning Risk Over the Lifecycle of a Project

The probability of an event that would lead to abandonment or long-term interruption is extremely low during the first 15 to 20 years of the Project life. Accordingly, the risk of decommissioning the Project is extremely low during this time frame. The reasons why the risk to decommission the Project is extremely low in the early phases of the Project include, but are not limited to:

- Project owners have sophisticated financing structures that allow the lender or tax equity partner to step in and rectify the event that may lead to abandonment.
- Most critical solar components have original equipment manufacturer (OEM) warranties with terms exceeding five years that include labor and parts. A warranty is an agreement or guarantee outlined by a manufacturer to a customer that defines performance requirements for a product or service. Warranties give customers a form of insurance if the purchased product or service does not adhere to quality standards. These warranties assure the Project owner, financing parties, and other stakeholders, that equipment will perform as expected which minimizes the risk of a decommissioning event. Average warranty lengths for critical solar components range from 5 to 10 years, with production warranties on solar panels extending to 20 to 25 years.
- Solar projects consist of many networked components designed to convert solar radiation into electrical energy. The failure of any single component will not result in a substantial reduction of energy generation that could lead to a decommissioning event.
- Solar projects are required to maintain replacement value property damage insurance coverage and business interruption insurance coverage. Business interruption insurance covers the loss of income that a business suffers after a disaster or equipment failure. Typical solar business interruption insurance covers income loss for twelve months from the date of the event triggering the loss.
- The replacement costs of solar components will typically decline over time, and accordingly, costs to replace failed or damaged equipment after lapsed OEM warranties will not create large financial hurdles for the Project.
- In the early stages of the Project, the resale value of the equipment is significantly higher than the decommissioning costs, resulting in a net positive (revenue).

Considering the reasons stated above, a decommissioning bond early in the life of a solar project life is not required to assure the coverage facility removal and site restoration costs.

Solar power is an increasingly popular form of renewable energy around the world and as an alternative to the burning of fossil fuels, solar ranks alongside wind and hydropower as essential energy options for the future of the planet. Solar also offers the additional benefit of being easier to build, operate, and decommission with minimal environmental risks. Recent rises in popularity and use can be linked to lower installation and operation costs and it is expected that this pattern will continue, further reducing the risk of a decommissioning event.

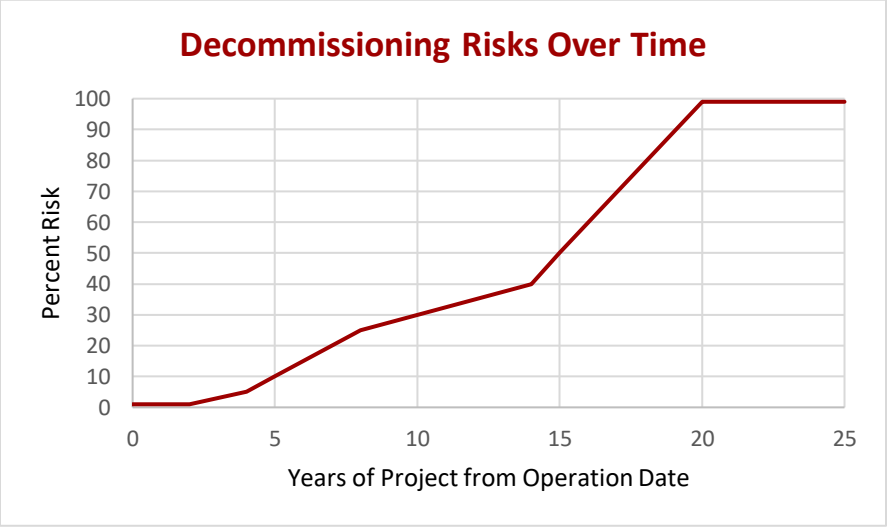
Decommissioning Risks Over Time

As previously noted, the probability of a decommissioning event that would lead to abandonment or long-term financial interruption is extremely low during the first 15 to 20 years of the Project life and accordingly, the financial risk to decommission the Project is also extremely low. A risk analysis approach is presented here for informational purposes only and has not been considered in the decommissioning cost estimates present in this Plan.

It is important to note that there are two aspects to consider when evaluating the risk for decommissioning the Project:

1. The risk of the need to decommission the Project as a whole (Project termination risk), and
2. The risk of failing to recuperate the cost of the decommissioning activities (decommissioning funding).

The most important concern for the County is the ability to recuperate the cost of decommissioning and restoration of the land to pre-Project conditions. The presence of a Power Purchase Agreement (PPA) in the first 20 years of the Project makes the likelihood of decommissioning very low during that time. The graph below summarizes the estimated decommissioning risk of cost recovery for the Project. The graph utilizes a “one percent” risk as the lowest risk; however, the financial value of the Project or equipment in the early years would far exceed the cost of the decommissioning and restoration activities and therefore, the graph is conservative.



The factors taken into consideration in estimating the risk include, but were not limited to:

- Years 1-5 – Minimal Project termination or financial risk due to presence of PPA with guarantee to purchase power, resale of value components, component warranties, value of facility.

- Years 5-10 – Similar consideration of previous period, except minimal increased financial risk due to the decrease in resale value of used components and rise in technological improvements of new equipment in market.
- Years 10-15 – Similar consideration of previous period, with slightly increased risk as warranties start to expire. Value of equipment is still substantial but decreasing.
- Years 15-20 – Similar consideration of previous period, warranties continue to expire; value of equipment diminishes with age and technological improvements in market.
- Years 20-25 – PPA expires, Project termination and funding risks increase, value of equipment diminishes, and technological improvements in market. A rise in salvage value of removed equipment due to diminishing natural resources and improvements in the efficiency of recycling/extraction technologies will offset the cost of decommissioning.

Commencement of Decommissioning

This Plan assumes that the Facility will be decommissioned under any of the following conditions:

1. The land lease (including the exercise of any extension options) ends and will either not be renewed or a new lease will not be entered into for the Project.
2. The system does not produce power for sale for a consecutive 12-month period, except in the instance of a force majeure event in which the Project is being repaired and/or restored.
3. The system is damaged and will not be repaired or replaced.

Removal of Nonutility Owned Equipment

To decommission the Solar Facility, the Project will include at a minimum:

- Disconnection from the utility power grid
- Removal of all Facility components: panels, inverters, wire, cable, combiner boxes, transformers, racks, trackers, tracker motors, weather monitoring, control system apparatus, etc.
- Removal of all non-utility owned equipment (at point of interconnection), conduits, structures, fencing, and foundations to a depth of at least three feet below grade.
- Restoration of property to a condition reasonably similar to its condition prior to Facility installation, or as initially agreed upon.
- Plant vegetation suitable for the location, native to the region, and which matches surrounding vegetation.

The owner of the leased property may request in writing for certain items to remain, e.g., access roads.

This decommissioning plan is based on current best management practices and procedures. This Plan may be subject to revision based on new standards and emergent best management practices at the time of decommissioning. Permits will be obtained as required and notification will be given to necessary stakeholders prior to decommissioning.

The decommissioning process will maximize the recycling, reuse and salvage of applicable facility components, which are outlined in the opinion of probable construction costs. Decommissioning

activities will not begin prior to issuance of approved permits by local regulatory agencies with appropriate jurisdiction.

Restoration of Property

At the time of decommissioning, the Project Company will restore the Solar Facility to a meadow-like condition. All waste and excess materials will be disposed of in accordance with municipal, provincial, and federal regulations. Waste that can be recycled under municipal programs will be recycled accordingly. Provided, however, the Project Company shall not be required to replace any structures that were removed to build the Solar Facility.

The restoration will consist of de-compaction of the topsoil by disking or tilling and re-vegetation of the property. At the end of the project the area will be seeded and fertilized with native vegetation as needed to return the site to as close as practicable to original or initially agreed-upon condition. Landscaping and paved entrance will remain following site restoration. The future use of the land will be determined at the time of decommissioning. Deciding factors will be influenced by County land use and comprehensive plans and regulations at such time in the future.

The developer will coordinate with the County to monitor vegetation and drainage following restoration until permanent vegetation is established. Erosion and sediment control, re-seeding, soil stabilization, weed control and fertilization will be provided by the developer as needed until the site is stabilized and approved to be completed by the County.

Upon completion of the site restoration, a final report of activities will be submitted to the County documenting the process and results.

Time Period to Complete Decommissioning

The Project Company will have twelve (12) months from the date decommissioning commences to complete decommissioning. Provided, however, the Project Company shall be able to request an extension of an additional three (3) months if it is in good faith diligently decommissioning and is delayed due to weather conditions or other items outside its control.

Party Responsible for Decommissioning

The Project Company is responsible for this decommissioning, provided however that the Project Company may contract with a third-party to perform the decommissioning on its behalf. Nothing in this plan relieves any obligation that the real estate property owner may have to remove the Facility as outlined in the SUP in the event the operator of the Facility does not fulfill this obligation.

Decommissioning Cost Estimate and Bonding

An engineer's opinion of probable construction cost and analysis of material salvage value were prepared as part of this decommissioning plan. Exhibit A summarizes the probable costs associated with decommissioning exclusive of salvage values. Exhibit B summarizes probable costs associated with trucking panels to approved recycling facilities.

County Code requires Hedera Solar, LLC to provide a faithful performance bond as a financial guarantee for proper decommissioning. This bond is separate from, and in addition to, performance bonding submitted for permitting. Furthermore, Hedera Solar, LLC will be required to submit detailed engineering plans at the time of decommissioning, and obtain construction permits as required by appropriate authorities.

Expenses associated with decommissioning the Project will be dependent on labor costs at the time of decommissioning. For the purposes of this report, current RSMeans data was used to estimate labor, material, and equipment expenses.

Total probable cost of decommissioning in Year 5 is estimated to be **$272,918.73** which includes an inflation factor of 3.2%.

EXHIBIT A

Hedera Solar, LLC
James City County, VA
Decommissioning Estimate Pro Forma w/o Salvage

The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs. LS = Lump Sum, HR = Hours, EA = Each, LF = Linear Feet.

Item	Quantity	Unit	Unit Price	Total Price
Mobilization	1	LS		$10,820.00
Supervision	-	HR	$115.00	$0.00
Temporary Facilities	1	LS		$1,260.00
Safety	1	LS		$850.00
Legal Expenses	1	LS		$230.00
General Liability Insurance	1	LS		$920.00
Contractor's G&A	1	LS		$1,720.00
SWPPP, Erosion Control Measures (Disturbed Area)	31	Ac	$670.00	$20,770.00
Seeding	2	Ac	$3,183.05	$6,366.10
Tilling 6" topsoil/scarifying access road and rough grading existing soil	2	Ac	$3,741.82	$7,483.64
Remove and Recycle Chainlink Fence	6,170	LF	$5.91	$36,487.28
Remove Power Pole	5	EA	$759.08	$3,795.40
Remove and Recycle AC Cables	1,500	LF	$1.13	$1,702.45
Remove and Recycle DC Cables	92,462	LF	$0.30	$27,361.68
Backfill AC and DC trenches	37,098	LF	$0.45	$16,572.41
Remove and Recycle Inverters/Transformers	1	EA	$5,148.55	$5,148.55
Remove and Recycle Photovoltaic Modules	7,400	EA	$6.73	$49,802.00
Remove and Recycle Piles	2,000	EA	$5.73	$11,460.00
Remove and Recycle Support Assemblies	231,485	LB	$0.07	$15,273.87
Contaminated Soils Testing	1	LS		$4,000.00
Reclamation Monitoring and Maintenance	1	LS		$10,000.00
			Subtotal:	$232,023.37
			Inflation (3.3%/year):	$40,895.36
			Total:	$272,918.73

Notes:

1. A site of similar size was used to derive potential quantities for erosion and sediment control. Quantities were determined by comparing "unit/MW" quantities directly.
2. Labor productivity and unit rates were derived from RSMeans Online (Heavy Construction, 2024 data).
3. Labor, material, and equipment rates are based on the RSMeans City Cost Index (CCI) for Richmond, VA.
4. Equipment rental rates determined from RSMeans and/or local rental facilities.

EXHIBIT B

Hedera Solar, LLC
James City County, VA
Panel Trucking Costs

$/mo/truck rental	$	5,000
$/mo/truck labor (FT+benefits)*	$	6,000
$/mo/truck maintenance	$	750
$/mo/truck insurance	$	1,250
Total $/mo/truck cost	$	13,000.00
$/gallon fuel	$	4.50
miles /gallon		8
Mileage (Toano, VA to Raleigh, NC) roundtrip		400
Total fuel cost per trip	$	225.00
Capacity in tons per trip		20
total number of panels		7,400
panel weight (tons)		222
Misc. Waste (tons)		20
Total trips		13
Loading/unloading hours per trip		1
road hours per trip		6.0
hours per day		10
days/month		21
trips per month per truck		30.0
Total truck months		1
Subtotal of Truck and Labor Cost	$	13,000
Fuel Cost	$	2,925
Total Trucking Cost	**$**	**15,925**

*Assumes truck labor only works half of the month at standard heavy truck operator rates

APPENDIX P: PROPOSED SUP CONDITIONS

Enclosed.

Proposed SUP Conditions

The following are Hexagon Energy's proposed SUP conditions for Hedera Solar, LLC.

1. Conceptual Master Plan. The subject property shall be developed in general conformance with the Conceptual Master Plan included in the Hedera Solar SUP application.

2. Project Revenue for Public Improvements. The owner of the Facility agrees to pay to the County the greater of: (A) the machinery and tool tax obligation assessed per the County Code or (B) that which would be due under a Revenue Share Ordinance adopted pursuant to Virginia Code Section 58.1-2636. Upon completion of the Facility, the Facility owner will provide final capital expenditures to the County. The Facility owner agrees to make the payments due pursuant to this condition to the County on or before an agreed upon date of each year to support construction of public improvements, the necessity of which need not be generated solely by the issuance of this SUP.

3. Height Limitation. The maximum height of all structures on the Property shall not exceed 17 feet above finished grade.

4. Glare. All photovoltaic solar panels shall be made of or be coated with anti-reflective materials to prevent glare

5. Smoke (Dust)/ Noise. No objectional effects, such as dust or noise, shall extend beyond the boundary of the Property

6. Lighting. If any lighting is proposed, it shall be shown on a lighting plan and the Planning Director or designee shall review and approve the lighting plan prior to final site plan approval. Lights shall be operated by a motion detector or be able to be turned on as needed by the Facility operator and shall not be routinely illuminated at night. No light poles shall exceed a height of 17 feet above finished grade unless otherwise approved by the Planning Director prior to final site plan approval.

7. Signage. Unless otherwise exempt by Section 24-74 of the Zoning Ordinance, no outdoor signage related to the Facility shall be permitted on the Property.

8. Fencing. The portion of the subject properties supporting solar panels shall be enclosed by security fencing of a type that meets federal and state regulations for solar electric generating facility fencing as determined by the Zoning Administrator upon approval of the site plan for the project. The fencing shall not exceed a height of eight feet above finished grade and not consist of barbed wire. Prior to final approval of any site plan, the Planning Director or designee shall review and approve details of any proposed fencing on the Property for consistency with this condition.

9. Storage of Panels. Damaged panels shall not be stored on the Property unless they are within a fully enclosed hazardous material and chemical storage container that meets Occupational Safety and Health Administration and Environmental Protection Agency Standards, as determined by the County Fire Chief. The location of such storage container, if used, shall be shown on the approved site plan. Should such a storage container not be used or available, a

written plan shall be provided on how damaged panels will be stored or processed such that hazardous materials will not come into contact with any soil, groundwater, or surface water. Such a plan shall be subject to the approval of the Director of the Stormwater and Resource Protection Division prior to final site plan approval.

10. Construction Management and Mitigation Plan. A Construction Management and Mitigation Plan shall be provided for review and approval by the Planning Director or designee prior to the approval of the site plan and shall include the following:
    a. Construction Management:
        i. Designated parking areas.
        ii. The plan shall note that all pile driving activity on the Property shall be limited to the hours of 8 a.m. to 6 p.m., Monday through Friday.
        iii. The plan shall note that other construction activities, including clearing and grading of the Property shall be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday.
        iv. The plan shall note that construction delivery traffic to the Property shall not be allowed during pick-up/drop-off times for surrounding schools.
        v. The plan shall indicate what methods will be used for the storage, transportation, and disposal of any waste and/or hazardous materials and the location of any storage facilities on the Property.
    b. Construction Mitigation:
        i. The plan shall indicate what methods will be used for dust mitigation.
        ii. The plan shall indicate how burning will be handled on the Property.

11. Pile Driving Notice. The James City County Zoning Administrator and adjacent property owners shall be notified, in writing, seven (7) days prior to the start of any pile driving phase(s).

12. Emergency Management Plan. Prior to final approval of any site plan, an Emergency Management Plan shall be prepared to address sitautions that may require response from James City County pubic safety personnel, including, without limitation, fire safety and emergency response personnel. The EMP shall:
    a. Be developed in conjunction with an approved by the County Fire Chief and County Police Chief or their designees prior to final approval of any site plan.
    b. Provide a mutually agreed upon schedule of communication and training sessions for James City County public safety personnel relative to possible emergency response situations at the Facility.
    c. Provide emergency contact information of the operators of the Facility to County public safety personnel.
    d. Provide that all emergency contact information pursuant to (c) will be posted on all Facility access gates.

13. Spill Prevention Control and Countermeasure Plan. Prior to approval of any site plan, a Spill Prevention Control and Countermeasure Plan (the "SPCCP") for the Facility shall be submitted to the Director of Stormwater and Resource Protection or designee for review and approval. The SPCCP shall outline spill prevention and pollutant containment measures and procedures necessary for the operation of the Facility until decommissioning.

14. Decommissioning and Restoration Plan and Agreement. Prior to final approval of any site

plan, a Decommissioning and Restoration Plan (the "DRP") shall be submitted to the Planning Director or designee for review and approval. The DRP shall outline the required steps for removal of all above- and below-ground Facility components, disposal and/or recycling of wastes and materials, soil stabilization, soil testing and mitigation for any found hazardous materials, and the revegetation and restoration of native habitat of the Property restored in a manner consistent with its condition prior to Facility construction. At the time of Facility decommissioning, the stormwater facilities on the Property must be evaluated for continued need and the final DRP must include the close-out or remediation of stormwater facilities. The DRP shall be enforceable by a written decommissioning agreement in accordance with and subject to the terms of Virginia Code § 15.2-2241.2. To ensure sufficient funds are available to the County to conduct the DRP, a surety in an amount sufficient for decommissioning the Facility and remediating the Property shall be posted with James City County in a form acceptable to the County Attorney. The decommissioning agreement shall be executed prior to approval of a site plan for the Facility.

15. Vegetated Buffer. Prior to final approval of any site plan, the Planning Director or designee shall review and approve a landscape plan for the Facility. The landscape plan shall provide a 35-foot wide vegetated buffer (the "Perimeter Buffer") along the perimeter of the Facility site. The Perimeter Buffer shall be increased to 100 feet along the boundary of the Property that fronts on Richmond Road. The Perimeter Buffer shall be vegetated in accordance with the applicable provisions of section 24-96 of the zoning ordinance for General Landscape Areas except that the 50-foot-wide buffer shall be planted so that the required number of plants equals at least 133 percent of the County's Landscaping Ordinance requirements with a minimum of 45 percent of the required number of trees and shrubs being evergreen.

16. Nutrient Management Plan. A nutrient management plan (the "NMP") prepared by a certified nutrient management planner shall be submitted for all of the area within the defined limits of work (disturbance) for the Property. The purpose of the NMP is to provide for long-term establishment and maintenance of turf grass, pasture, rangeland, or other similar type vegetative cover which preserve the long-term soil health for potential future farming purposes. The NMP shall have a component which specifically identifies and maintains and protects designated Prime Farmland soil mapping units consistent with Natural Resources Conservation Service soil data. The NMP shall be submitted for review and approval by the Director of Stormwater and Resource Protection prior to approval of any final site plan for the Facility. Upon approval of the NMP, the Facility operator shall be responsible for ensuring that any nutrient applied in the area within the defined limits of work is in strict accordance with the NMP.

17. Special Stormwater Criteria. The application of Special Stormwater Criteria practices are required for the Facility. The number of practices required will be per Table SSC-1 of the Stormwater Resource Protection Division's form entitled, "Stormwater-Special Criteria (SSC) in James City County, Virginia." Practices to be used for the Facility must be approved by the Director of Stormwater and Resource Protection for appropriateness to the development.

18. Resource Protection Area. Impacts to the Resource Protection Area shall be limited to required stormwater best management practice (the "BMP") outfalls and there shall be no clearing of trees or other vegetation to allow for sunlight access to panel arrays within the Resource Protection Area, as determined by the Director of Stormwater and Resource Protection.

19. Stormwater BMP Design. All stormwater BMPs shall meet or exceed the criteria of the appropriate Virginia Stormwater BMP Clearinghouse Design Specifications 1 through 17, as determined by the Director of Stormwater and Resource Protection.

20. Virginia Runoff Reduction Method. The Forested Open Space (the "FOS") land use category may be used to account for a maximum of 25% of the required water quality associated with the proposed development. The purchase of offsite nutrient credits toward needed water quality associated with the Facility will not be allowed. Should FOS be used in the Virginia Runoff Reduction Method calculations, the area of FOS must meet the criteria set forth in Virginia Stormwater BMP Clearinghouse, Design Specification No. 2: Sheet Flow to a Vegetated Filter Strip or Conserved Open Space. The declared FOS area must treat sheet flow from the Facility, in accordance with the Virginia Stormwater BMP Clearinghouse design specification criteria. The proposed use of FOS on the Property, disconnected from any drainage patterns of the Facility, will not be allowed.

21. Channel Protection. The stormwater BMP design shall provide channel protection for the 1-year, 24-hour storm event per the energy balance method, as defined in 9VAC25-870-66(B)(3)(a), for all outfall and discharge locations for the Facility.

22. Flood Protection. The stormwater BMP design shall provide flood protection through attenuation of the 10-year, 24-hour storm event, per 9VAC25-870-66(C)(2)(b).

23. Erosion and Sediment Control Inspection. The County may engage the services of County-contracted inspectors for inspections required by County Code Section 8-6(b), or as deemed appropriate by the County to ensure compliance with applicable codes and ordinances. The Facility operator shall be financially responsible for the costs of any inspections contracted for by the County for the Facility or the Property.

24. Panel Cover. Solar panels shall be considered unconnected impervious areas for post development water quantity calculations as defined in Chapter 9, Part 630 of the NRCS National Engineering Handbook. Calculations shall be in accordance with DEQ policy memoranda and guidance documentation for solar farm development, as determined by the Director of Stormwater and Resource Protection.

25. BMP Access Roads. BMP access roads shall be a paved or gravel surface and shall be a minimum of 12 feet wide with ingress and egress at each BMP with access to the downstream BMP areas, to include the outfall structure and outfall barrel discharge areas.

26. Temporary Erosion and Sedimentation Control Designs. Unless directly connected to the stormwater conveyance system, the solar panels should be considered unconnected impervious area when performing runoff computations for erosion and sediment controls. All temporary trap or basin designs will include the attenuation of a 25-year storm event in order to protect the existing downstream receiving channels, as determined by the Director of Stormwater and Resource Protection.

27. Outfall Monitoring. The downstream outfall channels from each permanent BMP shall be visually monitored annually for degradation and a report provided to the Director of Stormwater and Resource Protection by December 31 of each year for the life of the Facility. A baseline report shall be provided after all sediment basin construction is completed; current channel conditions shall be photo-documented, and the documentation shall extend to the confirmed US Army Corps of Engineers wetland line below each basin. Each outfall channel shall have at least three photo stations, one at the outfall, one at the wetland edge and at least one midway between. If channel degradation is in evidence per the Director of Stormwater and Resource Protection and meaning a head cut of more than 12 inches in height, a channel restoration plan must be provided to the Director of Stormwater and Resource Protection by March 31 of the following year and restoration activities commenced by June 30. This may include areas outside of the Facility on the Property. A restoration plan shall mean an Erosion and Sediment Control plan that provides for the repair of the degraded area to a stable line and grade and provides an erosion resistant surface over the repaired area sufficient to prevent future degradation from the basin outfall. At the end of the fifth year of reporting, should no channel degradation have been identified based on a review by the Director of Stormwater and Resource Protection, this condition is considered fulfilled and no further reporting will be required.

28. Commencement. The Facility shall be operational within 36 months from the date of adoption of this resolution authorizing the SUP, or this SUP shall automatically be void. A signed letter shall be submitted to the Planning Director prior to 36 months from the issuance of this SUP to confirm the operational status of the Facility.

29. Severance Clause. This Special Use Permit is not severable. Invalidation of any word, phrase, clause, sentence, or paragraph shall invalidate the remainder.

APPENDIX Q: TREE CLEARING CALCULATIONS

Hedera Solar
First Year of Operation: 2026
Project Lifetime: 35 Years
Project Acres: 45 Acres
Project Size: 3 MW_{ac}
Energy Generation Year 1: 7082 MWh

Base Information

Project information	
Hedera Solar	project name *(click on cell and select from drop-down)*
2026	first year of operation
35	year lifetime
45	project acres
3	MW
7,082	MWh Year 1
In-woods carbon storage	
34.99	Mg/ha of carbon storage *(sources #1, #4)*
15.61	US tons per acre
Conversion rates	
1	Mg/ha : 1 metric ton per hectare
0.44609	US tons per acre : 1 Mg/ha
42	gallons : 1 barrel
2000	lbs : 1 US ton
Electric generation in VA	
7.46%	coal
92.24%	natural gas
0.30%	petroleum
Resources required for energy generation in VA	
0.4979	short tons coal per MWh
6.9521	Mcf natural gas per MWh
2.0211	barrels petroleum per MWh

Results for Year 1 of Operation

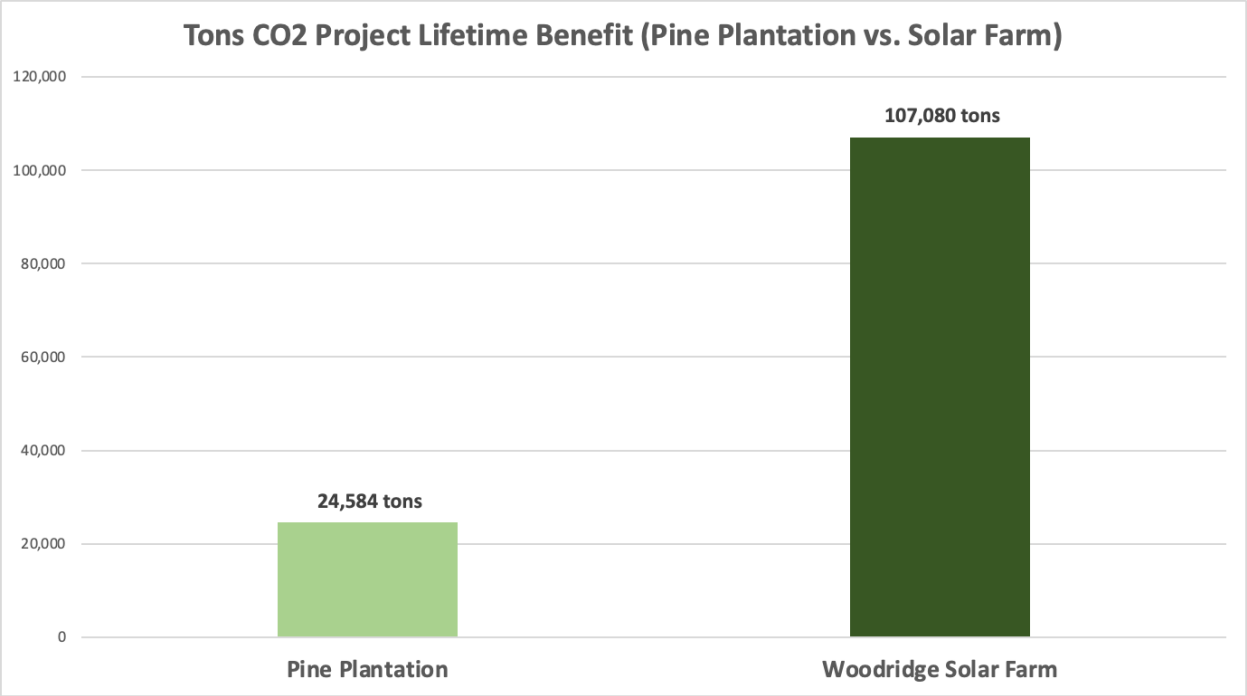
In-woods carbon storage without solar project in year 1	
702	US tons sequestered in project footprint
Energy generation replaced by solar project in year 1 *	
528	MWh avoided from burning coal
6,533	MWh avoided from burning natural gas
21	MWh avoided from burning petroleum
Resources avoided by solar project in year 1 *	
263	short tons of coal avoided
45,416	Mcf of natural gas avoided
43	barrels of petroleum avoided
1,791	gallons of petroleum avoided
CO2 avoided by solar project in year 1 *	
1,296,873	lbs CO2 avoided from coal (bituminous)
5,318,168	lbs CO2 avoided from natural gas
39,559	lbs CO2 avoided from petroleum
6,654,600	total lbs CO2 avoided
648	US tons CO2 avoided from coal (bituminous)
2,659	US tons CO2 avoided from natural gas
20	US tons CO2 avoided from petroleum
3,327	**US tons CO2 avoided in year 1**
74	**US tons CO2 per acre avoided in year 1**
0.470	**US tons CO2 per MWh avoided in year 1**
4.74x	**more CO2 avoided in year 1 than timber forest equivalent**

Results for Lifetime of Project

In-woods carbon storage without solar project throughout life of project	
24,584	US tons sequestered in project footprint
Energy generation replaced by solar project throughout lifetime *	
17,000	MWh avoided from burning coal
210,236	MWh avoided from burning natural gas
679	MWh avoided from burning petroleum
Resources avoided by solar project throughout lifetime *	
8,464	short tons of coal avoided
1,461,578	Mcf of natural gas avoided
1,372	barrels of petroleum avoided
57,622	gallons of petroleum avoided
CO2 avoided by solar project throughout lifetime *	
41,736,331	lbs CO2 avoided from coal (bituminous)
171,150,769	lbs CO2 avoided from natural gas
1,273,098	lbs CO2 avoided from petroleum
214,160,199	total lbs CO2 avoided
20,868	US tons CO2 avoided from coal (bituminous)
85,575	US tons CO2 avoided from natural gas
637	US tons CO2 avoided from petroleum
107,080	**US tons CO2 avoided**
2,380	**US tons CO2 per acre avoided**
0.470	**US tons CO2 per MWh avoided**
4.36x	**more CO2 avoided than timber forest equivalent**

Date	Year	MWh generation	% of coal generation offset	% of natural gas generation offset	% of petroleum generation offset	MWh avoided from burning coal	MWh avoided from burning natural gas	MWh avoided from burning petroleum	short tons of coal avoided	Mcf of natural gas avoided	gallons of petroleum avoided	lbs CO2 avoided from coal	lbs CO2 avoided from gas	lbs CO2 avoided from petroleum	US tons CO2 avoided from coal	US tons CO2 avoided from natural gas	US tons CO2 avoided from petroleum	US tons CO2 avoided
2026	1	7,082	7.46%	92.24%	0.30%	528	6,533	21	263	45,416	1,791	1,296,873	5,318,168	39,559	648	2,659	20	3,327
2027	2	7,047	7.46%	92.24%	0.30%	526	6,500	21	262	45,189	1,782	1,290,389	5,291,577	39,361	645	2,646	20	3,311
2028	3	7,011	7.46%	92.24%	0.30%	523	6,467	21	260	44,963	1,773	1,283,937	5,265,120	39,164	642	2,633	20	3,294
2029	4	6,976	7.46%	92.24%	0.30%	520	6,435	21	259	44,738	1,764	1,277,517	5,238,794	38,969	639	2,619	19	3,278
2030	5	6,941	7.46%	92.24%	0.30%	518	6,403	21	258	44,514	1,755	1,271,130	5,212,600	38,774	636	2,606	19	3,261
2031	6	6,907	7.46%	92.24%	0.30%	515	6,371	21	256	44,292	1,746	1,264,774	5,186,537	38,580	632	2,593	19	3,245
2032	7	6,872	7.46%	92.24%	0.30%	513	6,339	20	255	44,070	1,737	1,258,450	5,160,604	38,387	629	2,580	19	3,229
2033	8	6,838	7.46%	92.24%	0.30%	510	6,307	20	254	43,850	1,729	1,252,158	5,134,801	38,195	626	2,567	19	3,213
2034	9	6,804	7.46%	92.24%	0.30%	507	6,276	20	253	43,630	1,720	1,245,897	5,109,127	38,004	623	2,555	19	3,197
2035	10	6,770	7.46%	92.24%	0.30%	505	6,245	20	251	43,412	1,712	1,239,668	5,083,582	37,814	620	2,542	19	3,181
2036	11	6,736	7.46%	92.24%	0.30%	502	6,213	20	250	43,195	1,703	1,233,469	5,058,164	37,625	617	2,529	19	3,165
2037	12	6,702	7.46%	92.24%	0.30%	500	6,182	20	249	42,979	1,694	1,227,302	5,032,873	37,437	614	2,516	19	3,149
2038	13	6,669	7.46%	92.24%	0.30%	497	6,151	20	248	42,764	1,686	1,221,165	5,007,709	37,250	611	2,504	19	3,133
2039	14	6,635	7.46%	92.24%	0.30%	495	6,121	20	246	42,551	1,678	1,215,059	4,982,670	37,063	608	2,491	19	3,117
2040	15	6,602	7.46%	92.24%	0.30%	492	6,090	20	245	42,338	1,669	1,208,984	4,957,757	36,878	604	2,479	18	3,102
2041	16	6,569	7.46%	92.24%	0.30%	490	6,059	20	244	42,126	1,661	1,202,939	4,932,968	36,694	601	2,466	18	3,086
2042	17	6,536	7.46%	92.24%	0.30%	488	6,029	19	243	41,915	1,653	1,196,925	4,908,303	36,510	598	2,454	18	3,071
2043	18	6,504	7.46%	92.24%	0.30%	485	5,999	19	242	41,706	1,644	1,190,940	4,883,762	36,328	595	2,442	18	3,056
2044	19	6,471	7.46%	92.24%	0.30%	483	5,969	19	240	41,497	1,636	1,184,985	4,859,343	36,146	592	2,430	18	3,040
2045	20	6,439	7.46%	92.24%	0.30%	480	5,939	19	239	41,290	1,628	1,179,060	4,835,046	35,965	590	2,418	18	3,025
2046	21	6,406	7.46%	92.24%	0.30%	478	5,910	19	238	41,083	1,620	1,173,165	4,810,871	35,785	587	2,405	18	3,010
2047	22	6,374	7.46%	92.24%	0.30%	475	5,880	19	237	40,878	1,612	1,167,299	4,786,816	35,607	584	2,393	18	2,995
2048	23	6,343	7.46%	92.24%	0.30%	473	5,851	19	236	40,674	1,604	1,161,463	4,762,882	35,429	581	2,381	18	2,980
2049	24	6,311	7.46%	92.24%	0.30%	471	5,821	19	234	40,470	1,596	1,155,655	4,739,068	35,251	578	2,370	18	2,965
2050	25	6,279	7.46%	92.24%	0.30%	468	5,792	19	233	40,268	1,588	1,149,877	4,715,373	35,075	575	2,358	18	2,950
2051	26	6,248	7.46%	92.24%	0.30%	466	5,763	19	232	40,067	1,580	1,144,128	4,691,796	34,900	572	2,346	17	2,935
2052	27	6,217	7.46%	92.24%	0.30%	464	5,734	19	231	39,866	1,572	1,138,407	4,668,337	34,725	569	2,334	17	2,921
2053	28	6,186	7.46%	92.24%	0.30%	461	5,706	18	230	39,667	1,564	1,132,715	4,644,995	34,552	566	2,322	17	2,906
2054	29	6,155	7.46%	92.24%	0.30%	459	5,677	18	229	39,469	1,556	1,127,051	4,621,770	34,379	564	2,311	17	2,892
2055	30	6,124	7.46%	92.24%	0.30%	457	5,649	18	227	39,271	1,548	1,121,416	4,598,661	34,207	561	2,299	17	2,877
2056	31	6,093	7.46%	92.24%	0.30%	454	5,621	18	226	39,075	1,541	1,115,809	4,575,668	34,036	558	2,288	17	2,863
2057	32	6,063	7.46%	92.24%	0.30%	452	5,592	18	225	38,880	1,533	1,110,230	4,552,790	33,866	555	2,276	17	2,848
2058	33	6,032	7.46%	92.24%	0.30%	450	5,565	18	224	38,685	1,525	1,104,679	4,530,026	33,696	552	2,265	17	2,834
2059	34	6,002	7.46%	92.24%	0.30%	448	5,537	18	223	38,492	1,518	1,099,156	4,507,375	33,528	550	2,254	17	2,820
2060	35	5,972	7.46%	92.24%	0.30%	445	5,509	18	222	38,299	1,510	1,093,660	4,484,839	33,360	547	2,242	17	2,806
	35	227,915	7.46%	92.24%	0.30%	17,000	210,236	679	8,464	1,461,578	57,622	41,736,331	171,150,769	1,273,098	20,868	85,575	637	107,080
	year lifetime	MWh generation	% of coal generation offset	% of natural gas generation offset	% of petroleum generation offset	MWh avoided from burning coal	MWh avoided from burning natural gas	MWh avoided from burning petroleum	short tons of coal avoided	Mcf of natural gas avoided	gallons of petroleum avoided	lbs CO2 avoided from coal	lbs CO2 avoided from gas	lbs CO2 avoided from petroleum	US tons CO2 avoided from coal	US tons CO2 avoided from natural gas	US tons CO2 avoided from petroleum	US tons CO2 avoided

Land use	CO2 project lifetime benefit	Unit
Pine Plantation	24,584	US tons
Woodridge Solar Farm	107,080	US tons



Sequestration Source	Comparison Fuel Source	CO2 Sequestered per Acre	CO2 Sequestered per Year	CO2 Sequestered for Life of Project	Unit
Pine Plantation	All Sources	15.6	702	24,584	US tons
Solar Project	Petroleum	0.4	20	637	US tons
Solar Project	Coal	14.4	648	20,868	US tons
Solar Project	Natural Gas	59.1	2,659	85,575	US tons
Solar Project	All Sources	73.9	3,327	107,080	US tons

YEAR	STATE	TYPE OF PRODUCER	ENERGY SOURCE ^ (UNITS)	CONSUMPTION for ELECTRICITY	GENERATION (Megawatthours)
2020	VA	Total Electric Power Industry	Coal (Short Tons)	1,872,269	3,762,795
2020	VA	Total Electric Power Industry	Natural Gas (Mcf)	452,604,901	62,623,070
2020	VA	Total Electric Power Industry	Petroleum (Barrels)	525,522	230,945
2020	VA	Combined Heat and Power, Industrial Power	Coal (Short Tons)	57,600	122,737
2020	VA	Combined Heat and Power, Industrial Power	Natural Gas (Mcf)	8,414,689	832,110
2020	VA	Combined Heat and Power, Industrial Power	Petroleum (Barrels)	6,277	3,016
2020	VA	Combined Heat and Power, Commercial Power	Coal (Short Tons)	233	1,250
2020	VA	Combined Heat and Power, Commercial Power	Natural Gas (Mcf)	42,719	6,250
2020	VA	Combined Heat and Power, Commercial Power	Petroleum (Barrels)	150,560	43,569
2020	VA	Combined Heat and Power, Electric Power	Coal (Short Tons)	0	0
2020	VA	Combined Heat and Power, Electric Power	Natural Gas (Mcf)	17,116,782	1,967,186
2020	VA	Combined Heat and Power, Electric Power	Petroleum (Barrels)	108	65
2020	VA	Electric Generators, Independent Power Producers	Coal (Short Tons)	40,489	75,598
2020	VA	Electric Generators, Independent Power Producers	Natural Gas (Mcf)	120,686,447	15,752,433
2020	VA	Electric Generators, Independent Power Producers	Petroleum (Barrels)	81,016	42,019
2020	VA	Electric Generators, Electric Utilities	Coal (Short Tons)	1,773,947	3,563,210
2020	VA	Electric Generators, Electric Utilities	Natural Gas (Mcf)	306,344,264	44,065,092
2020	VA	Electric Generators, Electric Utilities	Petroleum (Barrels)	287,561	142,276

Consumption source (source #2)

Source: EIA Electricity Data - State Electricity Profiles, Consumption of Fuels used to generate electricity

Source link: https://www.eia.gov/electricity/data.php#consumption

Download link: https://www.eia.gov/electricity/data/state/annual_consumption_state.xls

Generation source (source #3)

Source: EIA Electricity Data - State Electricity Profiles, Generation and thermal output

Source link: https://www.eia.gov/electricity/data.php#generation

Download link: https://www.eia.gov/electricity/data/state/annual_generation_state.xls

^ Note on energy sources

Coal includes anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal. As of 2011, coal also inlcudes synthesis gas derived from coal.

Other Gases includes blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels. As of 2011, Other Gases does not include propane.

Petroleum includes distillate fuel oil (all diesel and No. 1, No. 2, and No. 4 fuel oils), residual fuel oil (No. 5 and No. 6 fuel oils and bunker C fuel oil), jet fuel, kerosene, petroleum coke, waste oil, and beginning in 2011, propane.

Carbon Dioxide Emissions Coefficients by Fuel

Carbon Dioxide (CO2) Factors:	Pounds CO2 Per Unit of Volume or Mass		Kilograms CO2 Per Unit of Volume or Mass		Pounds CO2 Per Million Btu	Kilograms CO2 Per Million Btu
For homes and businesses						
Propane	12.70	gallon	5.76	gallon	139.05	63.07
Butane	14.80	gallon	6.71	gallon	143.20	64.95
Butane/Propane Mix	13.70	gallon	6.21	gallon	141.12	64.01
Home Heating and Diesel Fuel (Distillate)	22.40	gallon	10.16	gallon	161.30	73.16
Kerosene	21.50	gallon	9.75	gallon	159.40	72.30
Coal (All types)	4,631.50	short ton	2,100.82	short ton	210.20	95.35
Natural Gas	117.10	thousand cubic feet	53.12	thousand cubic feet	117.00	53.07
Gasoline	19.60	gallon	8.89	gallon	157.20	71.30
Residual Heating Fuel (Businesses only)	26.00	gallon	11.79	gallon	173.70	78.79
Other transportation fuels						
Jet Fuel	21.10	gallon	9.57	gallon	156.30	70.90
Aviation Gas	18.40	gallon	8.35	gallon	152.60	69.20
Industrial fuels and others not listed above						
Flared natural gas	120.70	thousand cubic feet	54.75	thousand cubic feet	120.60	54.70
Petroleum coke	32.40	gallon	14.70	gallon	225.10	102.10
Other petroleum & miscellaneous	22.09	gallon	10.02	gallon	160.10	72.62
Nonfuel uses						
Asphalt and Road Oil	26.34	gallon	11.95	gallon	166.70	75.61
Lubricants	23.62	gallon	10.72	gallon	163.60	74.21
Petrochemical Feedstocks	24.74	gallon	11.22	gallon	156.60	71.03
Special Naphthas (solvents)	20.05	gallon	9.10	gallon	160.50	72.80
Waxes	21.11	gallon	9.57	gallon	160.10	72.62
Coals by type						
Anthracite	5,685.00	short ton	2,578.68	short ton	228.60	103.70
Bituminous	4,931.30	short ton	2,236.80	short ton	205.70	93.30
Subbituminous	3,715.90	short ton	1,685.51	short ton	214.30	97.20
Lignite	2,791.60	short ton	1,266.25	short ton	215.40	97.70
Coke	6,239.68	short ton	2,830.27	short ton	251.60	114.12
Other fuels						
Geothermal (average all generation)	NA		NA		16.99	7.71
Municiple Solid Waste	5,771.00	short ton	2,617.68	short ton	91.90	41.69
Tire-derived fuel	6,160.00	short ton	2,794.13	short ton	189.54	85.97
Waste oil	924.0	barrel	419.12	barrel	210.00	95.25

Source: U.S. Energy Information Administration estimates.

Note: To convert to carbon equivalents multiply by 12/44.

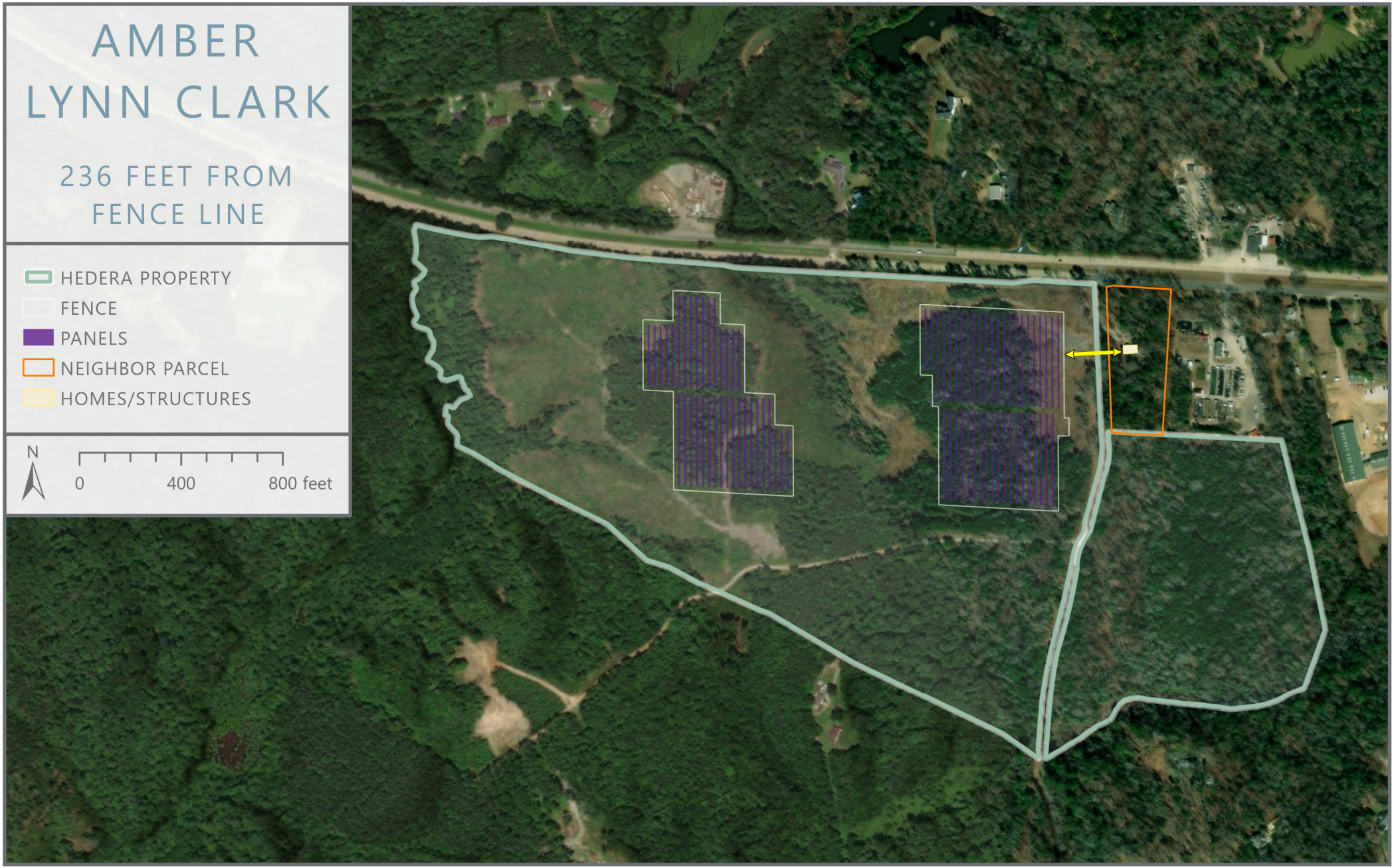
Coefficients may vary slightly with estimation method and across time.

Identifier	Reference Type	Title	Link	Detail
#1	Source	VT Study: Carbon Removal by Pine Plantations in Southeast	https://vtechworks.lib.vt.edu/bitstream/handle/10919/30218/WANG_HJ_D_2010.pdf?sequence=1&isAllowed=y	As of 2010, the average in-woods carbon storage for loblolly pine forests in the Southeast US was 30.54 Megagrams per hectare (Mg/ha). The average for Virginia was 34.99 Mg/ha.
#2	Source	EIA Electricity Data - State Electricity Profiles, Consumption of Fuels used to generate electricity	https://www.eia.gov/electricity/data.php#consumption	
#3	Source	EIA Electricity Data - State Electricity Profiles, Generation and thermal output	https://www.eia.gov/electricity/data.php#generation	
#4	Source	Duke, School of Environment Article: Trees vs. Solar Panels	https://blogs.nicholas.duke.edu/citizenscientist/trees-vs-solar-panels/	In the eastern United States, forests typically accumulate about 2 metric tons of carbon per hectare during each year of growth. That is equivalent to 0.81 tons of carbon/acre.
*	Assumption	Energy Offset Assumptions		Assume solar offsets natural gas, coal and petroleum in ratio according to 2019 consumption. Assume no offset to nuclear or other emissions free sources.
^	Note	Energy Source Notes from EIA		Coal includes anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal. As of 2011, coal also inlcudes synthesis gas derived from coal. Other Gases includes blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels. As of 2011, Other Gases does not include propane. Petroleum includes distillate fuel oil (all diesel and No. 1, No. 2, and No. 4 fuel oils), residual fuel oil (No. 5 and No. 6 fuel oils and bunker C fuel oil), jet fuel, kerosene, petroleum coke, waste oil, and beginning in 2011, propane.

APPENDIX R: NEIGHBORING PROPERTY OUTREACH AND DISTANCE MAPS

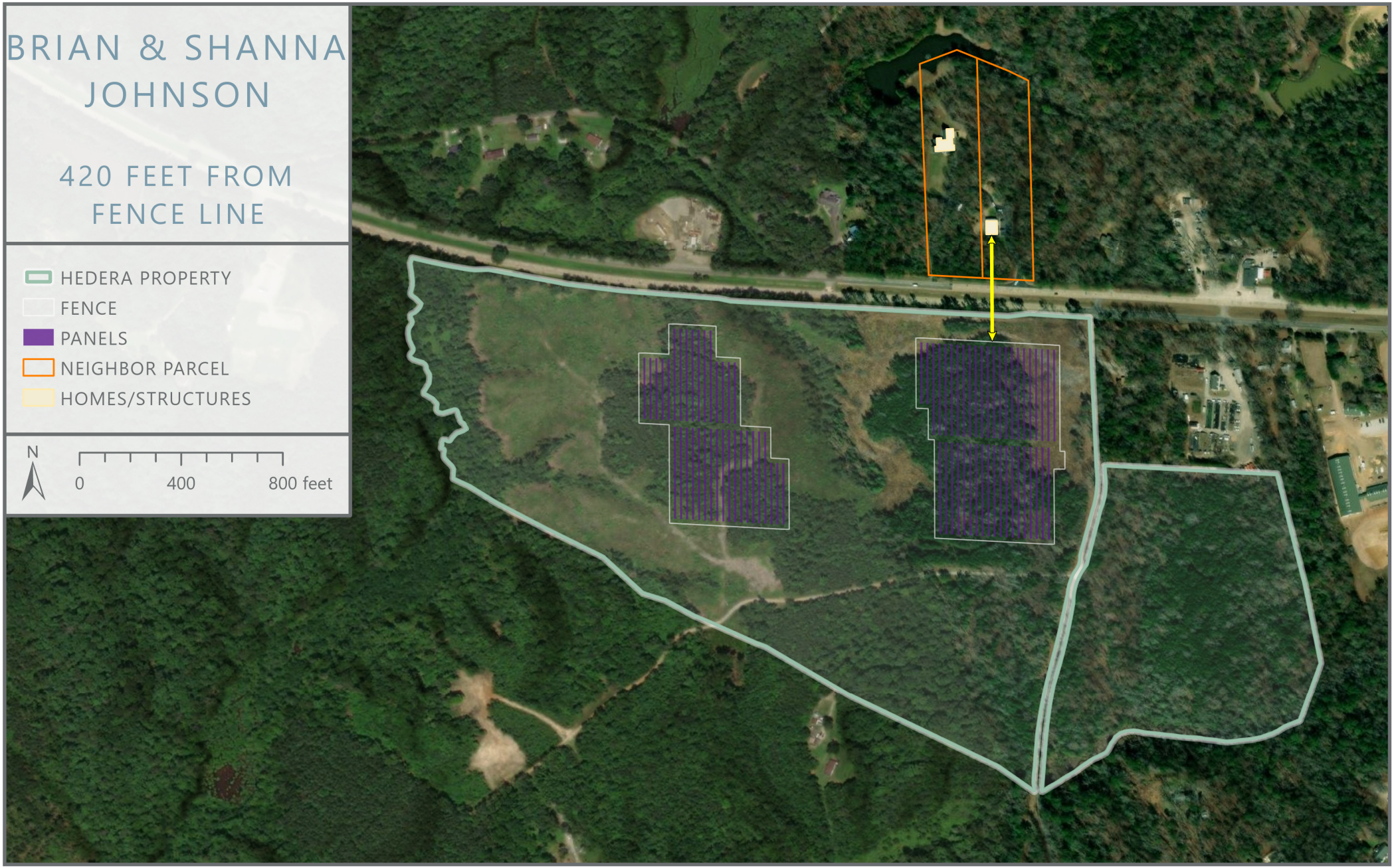
HEXAGON ENERGY

HEDERA SOLAR



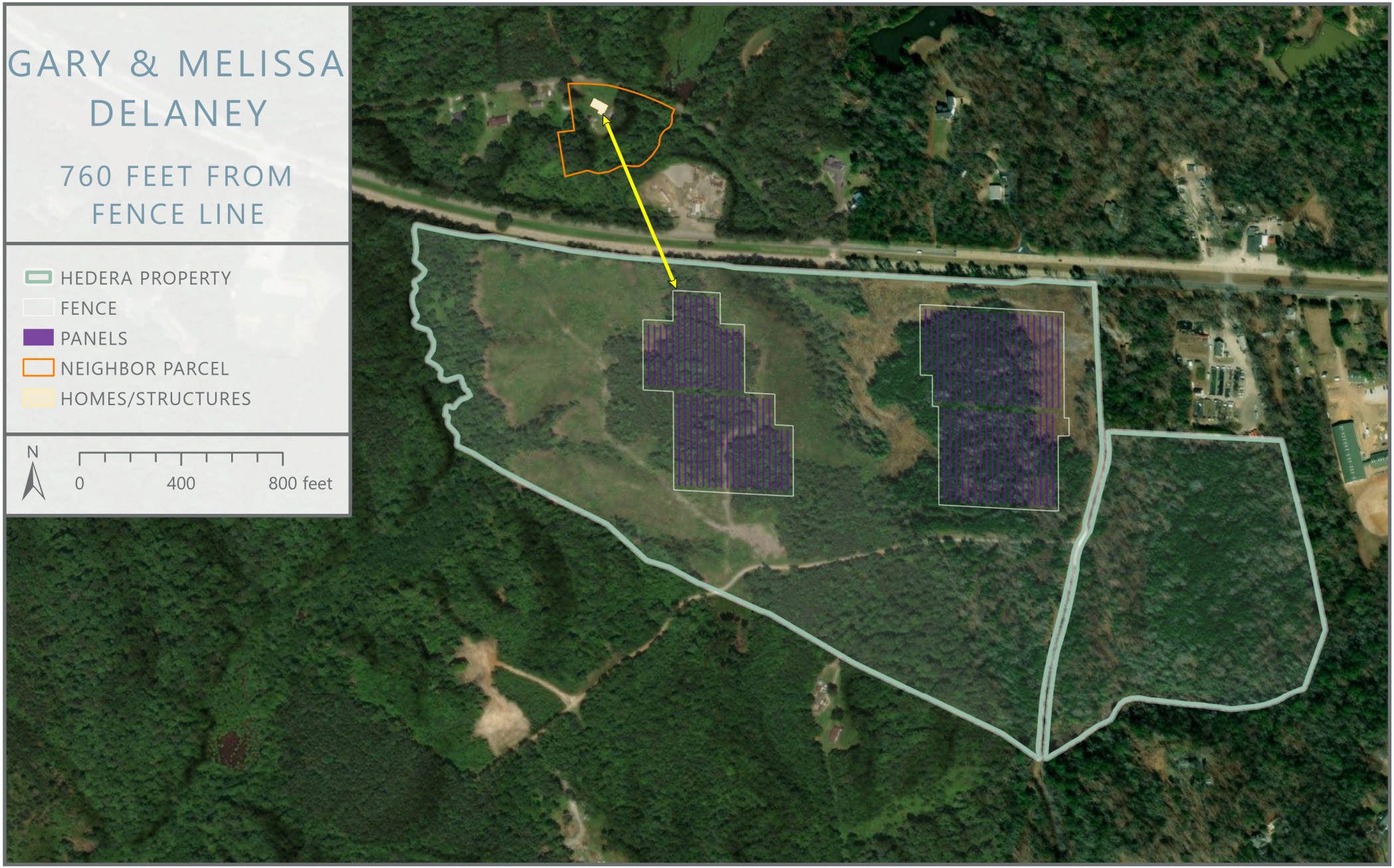
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HEDERA SOLAR



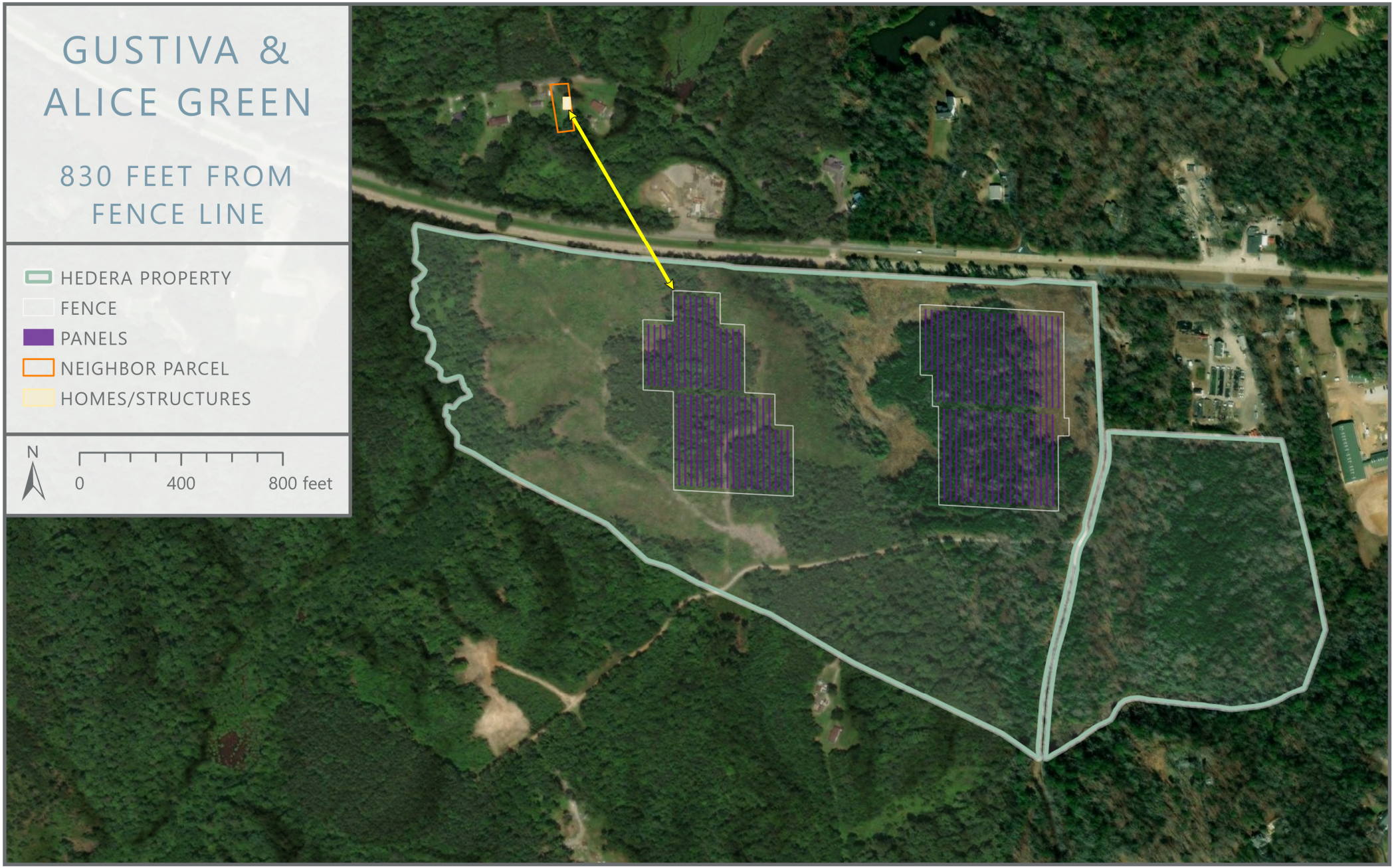
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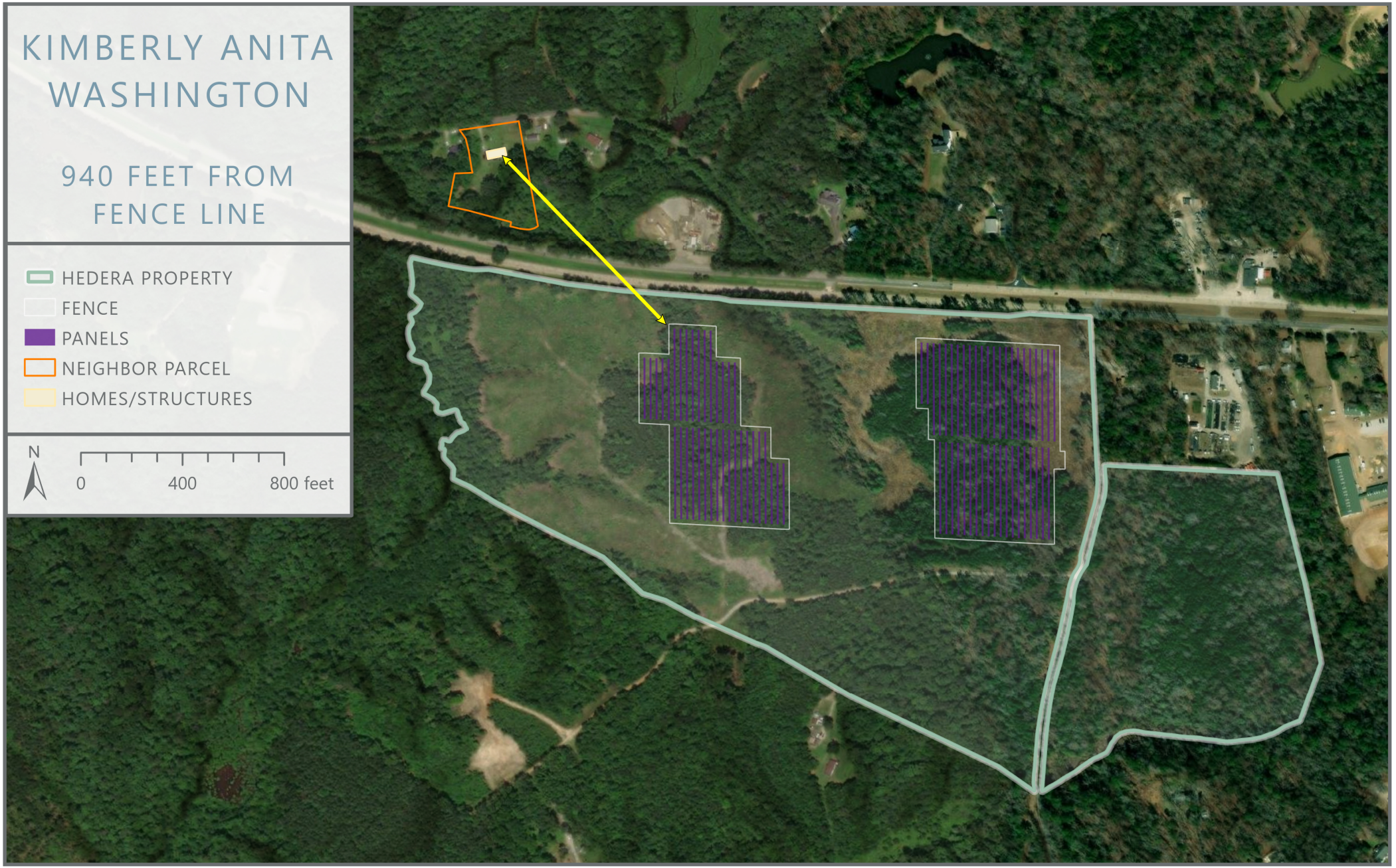
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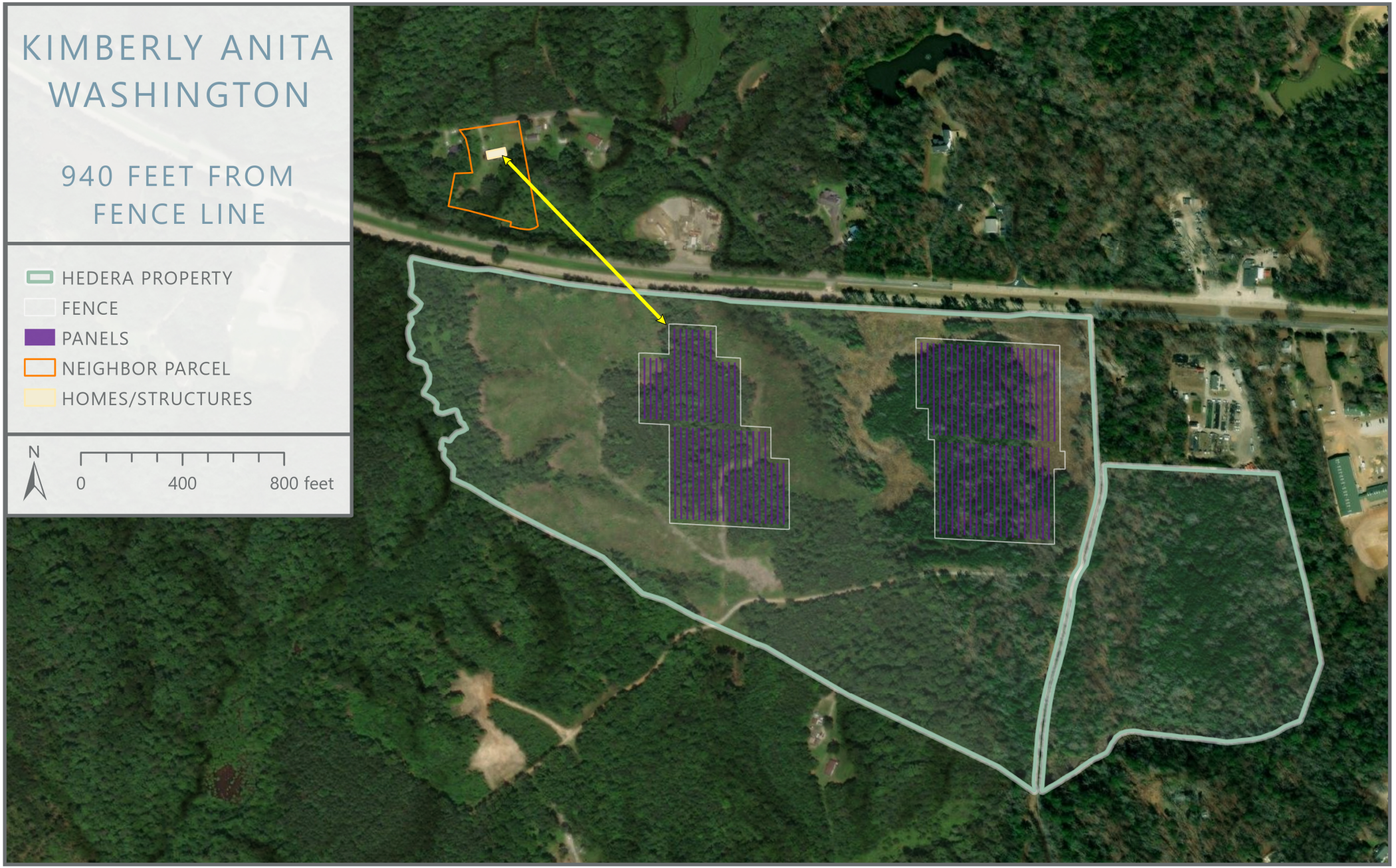
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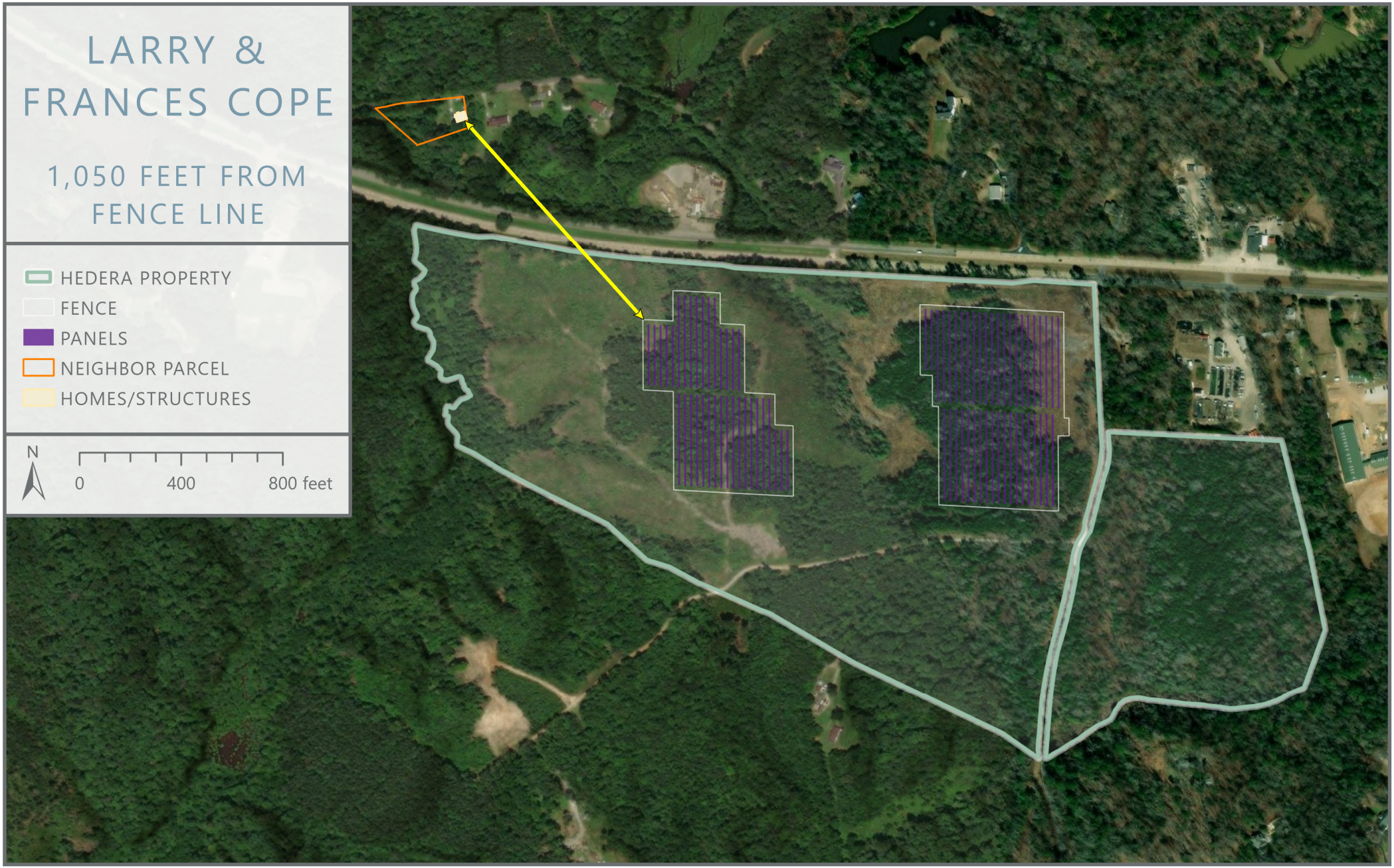
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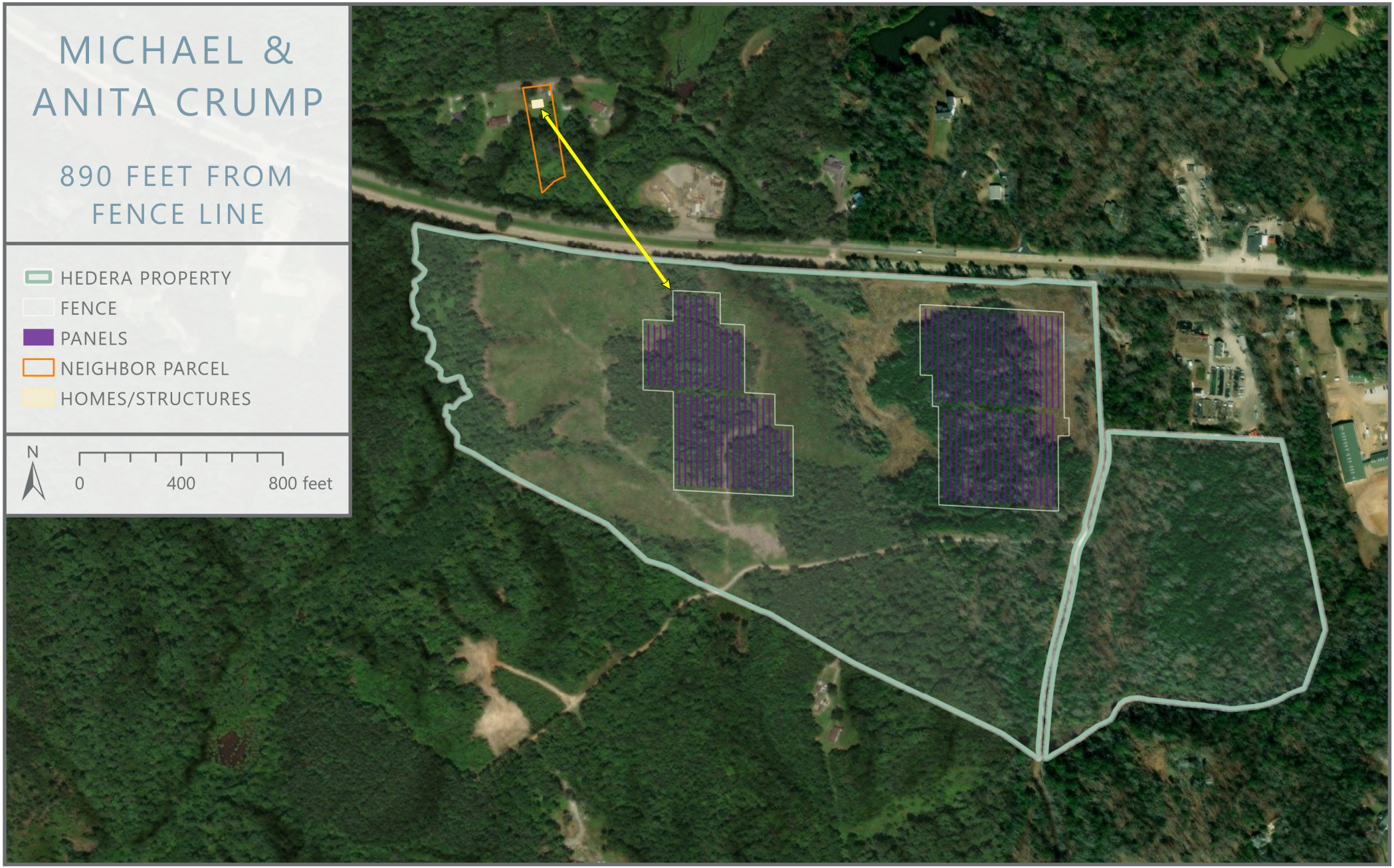
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HEDERA SOLAR



HEXAGON ENERGY

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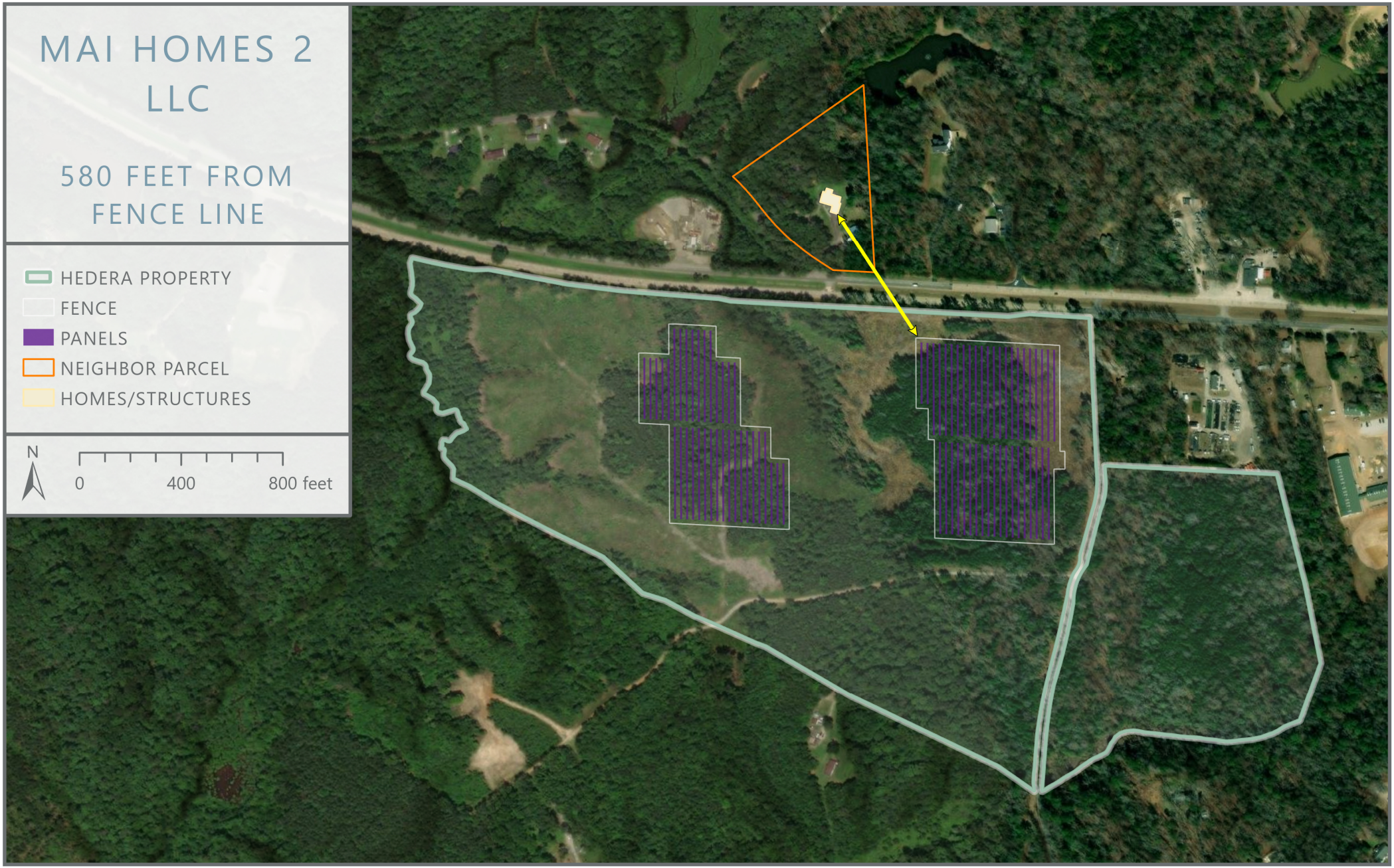


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HEDERA SOLAR

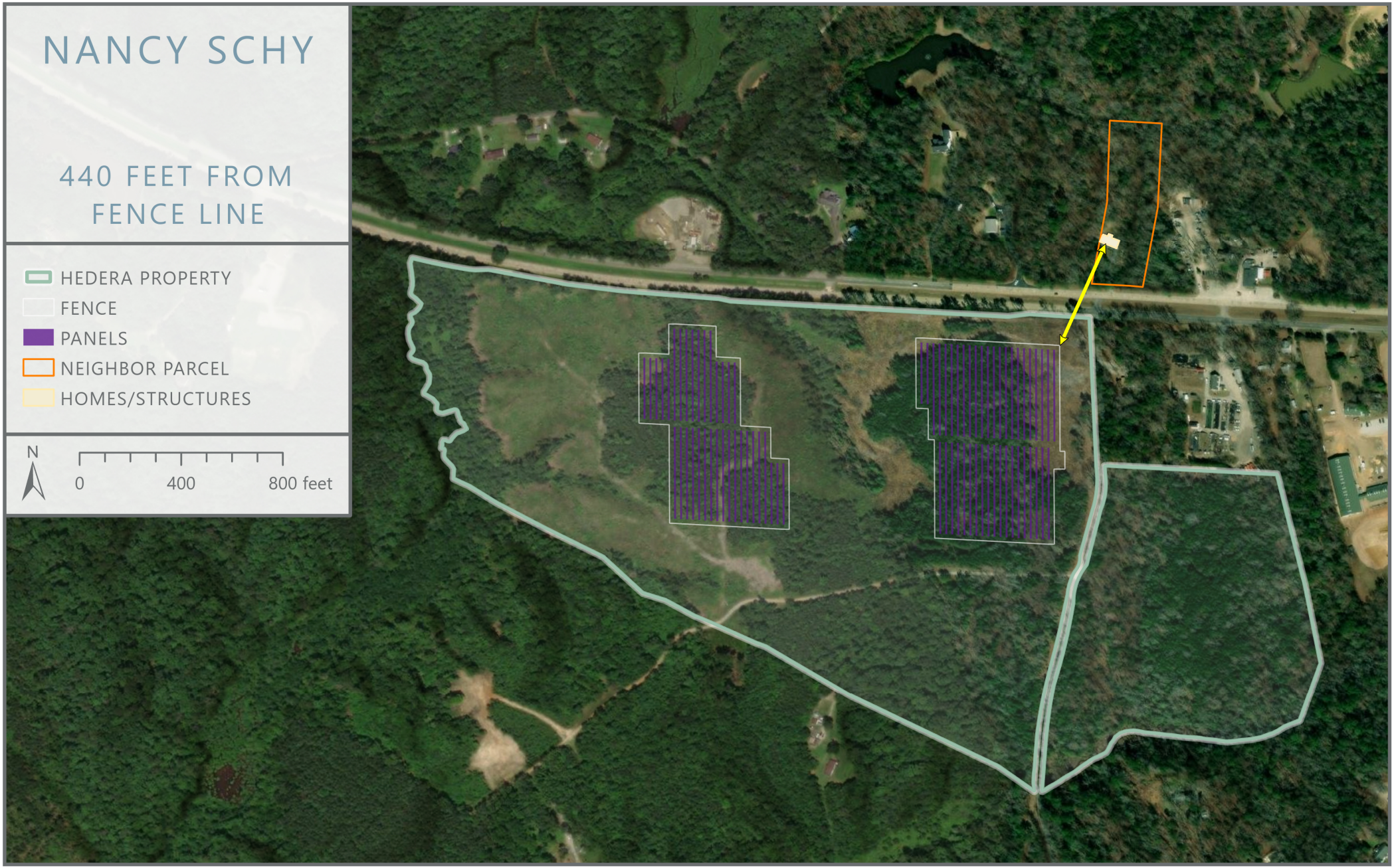
MAI HOMES 2 LLC

580 FEET FROM FENCE LINE



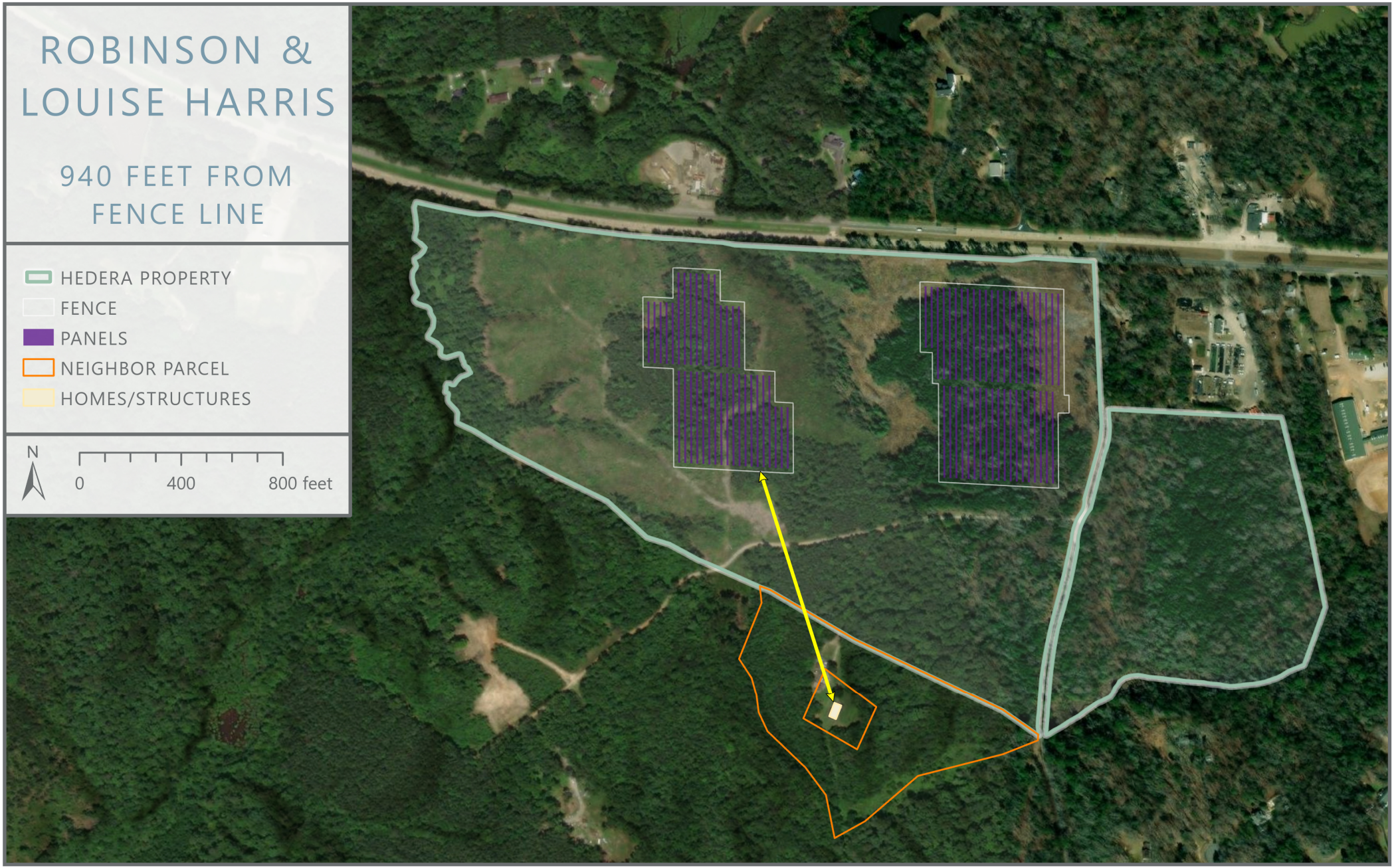
HEXAGON ENERGY

HEDERA SOLAR



HEXAGON ENERGY

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HEXAGON ENERGY

HEDERA SOLAR

MM&W PROPERTIES LLC

715 FEET FROM FENCE LINE

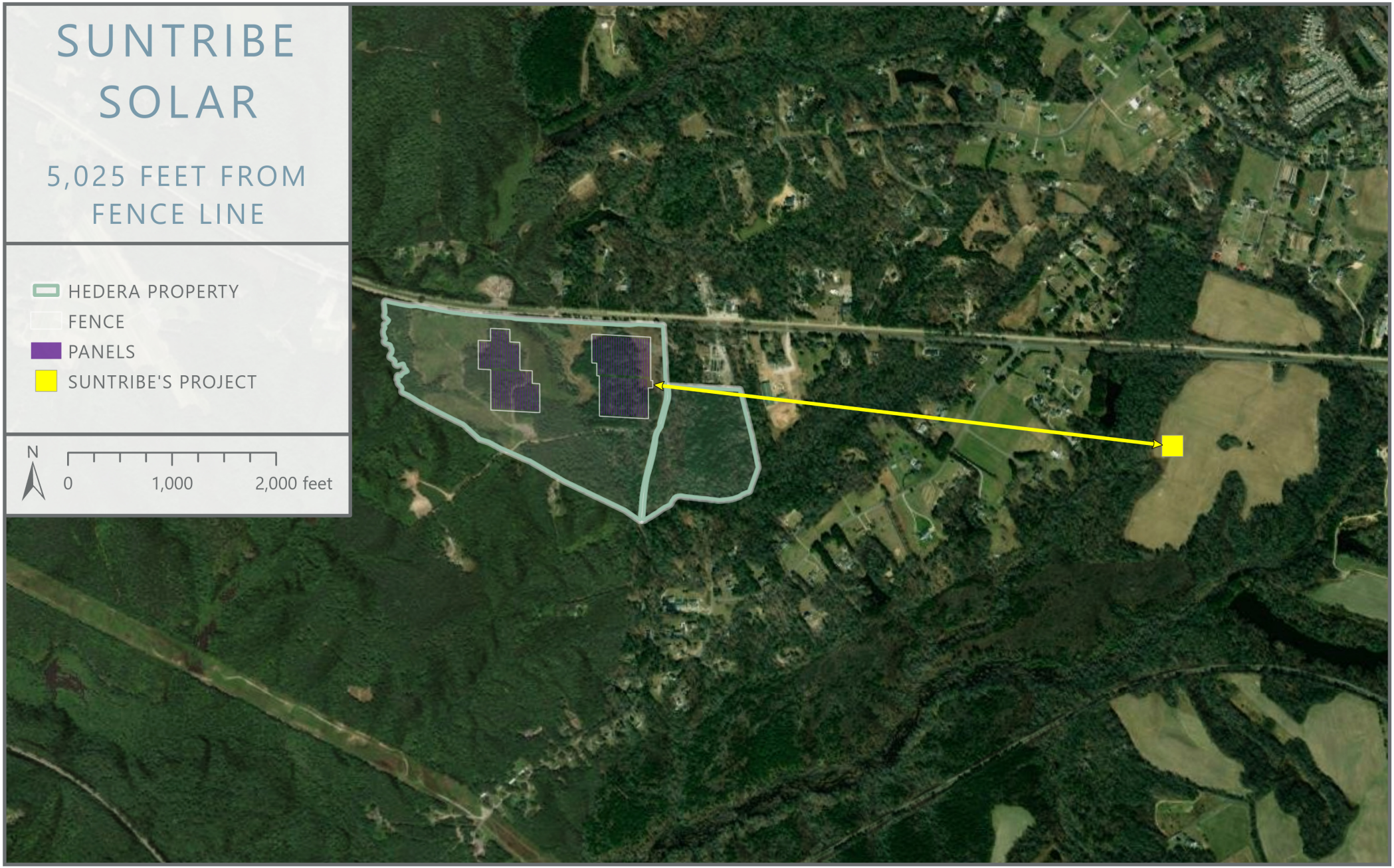


HEXAGON ENERGY

HEDERA SOLAR

SUNTRIBE SOLAR

5,025 FEET FROM FENCE LINE



October 1, 2024

Clark, Amber Lynn
100 Ivy Hill Rd
Toano, VA 23168

Hello Ms.Clark,

My name is Ester Rekhelman, and I'm a Project Developer at Hexagon Energy. Hexagon Energy is a Charlottesville-based renewable energy developer that specializes in solar energy projects throughout Virginia. I'm reaching out to you because you are a neighbor adjacent to a small-scale solar project we've been working on called Hedera Solar. Hedera Solar is located along Ivy Hill Road near the intersection of Richmond Road, as shown on the map included in this packet.

You may have noticed that this is one of a few letters I've sent to you about this project, and I appreciate your patience. While we continue to have conversations with the County Staff, Planning Commission, and Board of Supervisors, I would also like to discuss the project with you individual and get your feedback, given the proximity of your property to the project.

My phone number is 434.218.0595 – please do give me a call if you receive this letter. I am also available over email at erekhelman@hexagon-energy.com. Alternatively, I am just a short drive away in Charlottesville, VA, and am happy to come to your area to meet with you anytime.

About the Project, Hedera Solar
The project is sited on the 100-acre property at 101 Ivy Hill Rd. It will take up less than 19 acres and will be covered in only 5.4 acres of panels. The site plan includes a healthy vegetative buffer surrounding the entirety of the panels and fencing. The vegetative buffer will use the existing trees and dense vegetation on the property to shield the view from all vantages. Accompanying this letter you will find information about the project and a map showing the location of the project.

Your input matters
Since your property is adjacent to the project, I want to be sure you have the opportunity to provide input and ask questions.

In the meantime, please reach out to me with any questions or comments. I can be reached via email or phone, and you will find that information below**. It is important to us that this project be a good neighbor.** Hedera Solar is a small, yet long-term project that we hope to develop with as much of your input as possible.

Thank you again for your time and consideration. I look forward to meeting you.

Respectfully,

Ester Rekhelman

Ester Rekhelman
Project Developer
erekhelman@hexagon-energy.com
434.218.0595

USPS Tracking®

Tracking / FAQs >

Track Packages Anytime, Anywhere

Get the free Informed Delivery® feature to receive automated notifications on your packages

Learn More

Remove ×

Tracking Number:

9489009000276335379541

Copy Add to Informed Delivery

Latest Update

Your item was delivered to an individual at the address at 3:26 pm on October 5, 2024 in TOANO, VA 23168.

Get More Out of USPS Tracking:

USPS Tracking Plus®

Delivered

Delivered, Left with Individual

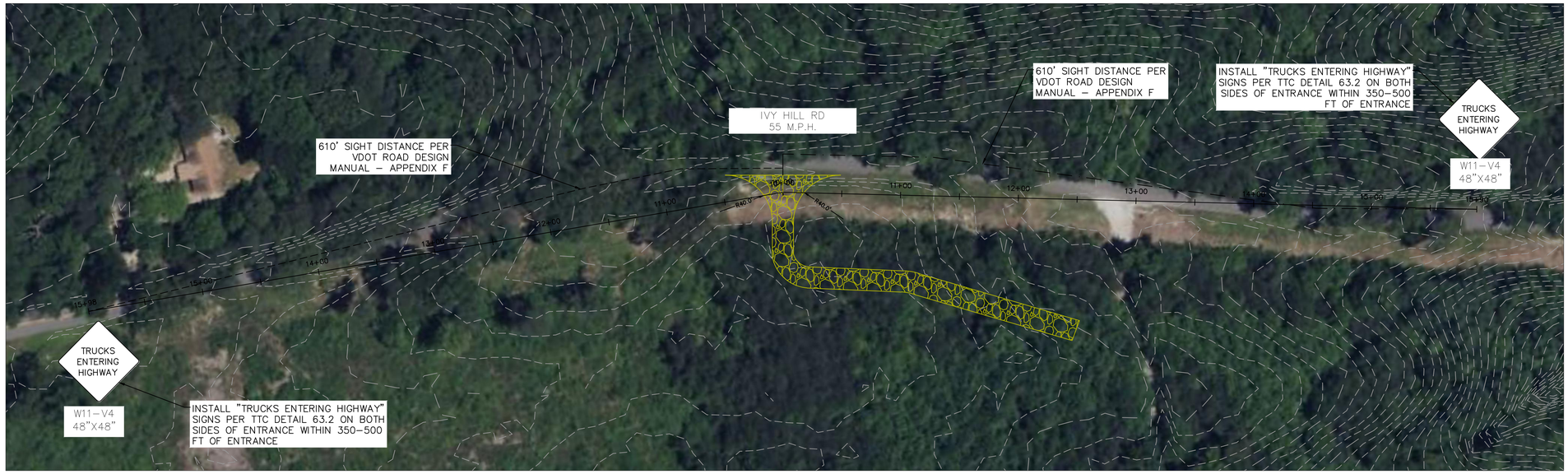
TOANO, VA 23168

October 5, 2024, 3:26 pm

See All Tracking History

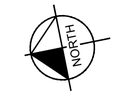
What Do USPS Tracking Statuses Mean?

APPENDIX S: ALTERNATIVE ROAD ENTRANCE ON IVY HILL RD



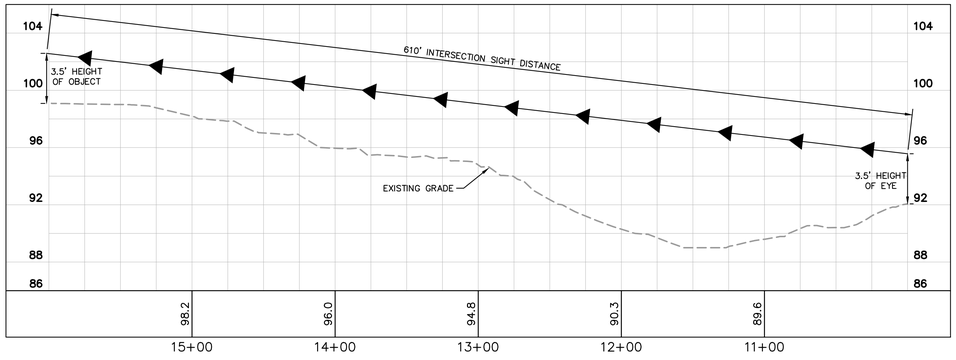
ENTRANCE AND SIGHT DISTANCE NOTES

1. THE PROPOSED SITE IS A UTILITY INFRASTRUCTURE PROJECT WITH LESS THAN 10 TRIPS PER DAY. THEREFORE, THE PERMANENT ENTRANCES ARE CONSIDERED PRIVATE AND WILL CONFORM TO VDOT STD. PE-1 WITH MODIFIED DIMENSIONS.
2. TO ENSURE AND DOCUMENT THE FUNCTIONALITY OF THE PERMANENT AND TEMPORARY ENTRANCES DURING THE CONSTRUCTION STAGES OF THE PROJECT, WARNING SIGNS AND SIGHT DISTANCE LINES ARE SHOWN HERE IN ACCORDANCE WITH VIRGINIA WORK AREA PROTECTION MANUAL GUIDANCE PER TTC 63.2 AND THE VDOT ROAD DESIGN MANUAL - APPENDIX F. WHILE NO LOGGING OPERATIONS ARE PROPOSED, TTC 63.2 PROVIDES PARAMETERS TO ENSURE THE ADEQUACY OF ENTRANCES USED FOR SHORT-TERM CONSTRUCTION. THESE MEASURES ARE PROPOSED ONLY FOR THE DURATION OF CONSTRUCTION.
3. ALL WARNING SIGNS AND OTHER TEMPORARY MEASURES ARE TO BE REMOVED ONCE CONSTRUCTION IS COMPLETE.
4. LIMBS AND SHRUBS ON THE PROPERTY AND WITHIN THE RIGHT-OF-WAY ARE TO BE TRIMMED AS NEEDED TO ENSURE ADEQUATE SIGHT DISTANCE.
5. PERMITTEE WILL BE RESPONSIBLE FOR ENSURING THAT ALL ENTRANCE DRAINAGE DOES NOT FLOW ONTO THE EXISTING ROAD
6. PERMITTEE WILL BE RESPONSIBLE FOR REMOVING AND CLEANING ANY MUD TRACKED FORM THE PROJECT SITE ON THE THE EXISTING ROADWAY.
7. EXISTING PAVEMENT TO BE PROTECTED. USE OF RUBBER TIRED EQUIPMENT IS SUGGESTED
8. TOPOGRAPHIC INFORMATION BASED ON PUBLIC LIDAR DATA.



GRAPHIC SCALE IN FEET
0 25 50 100

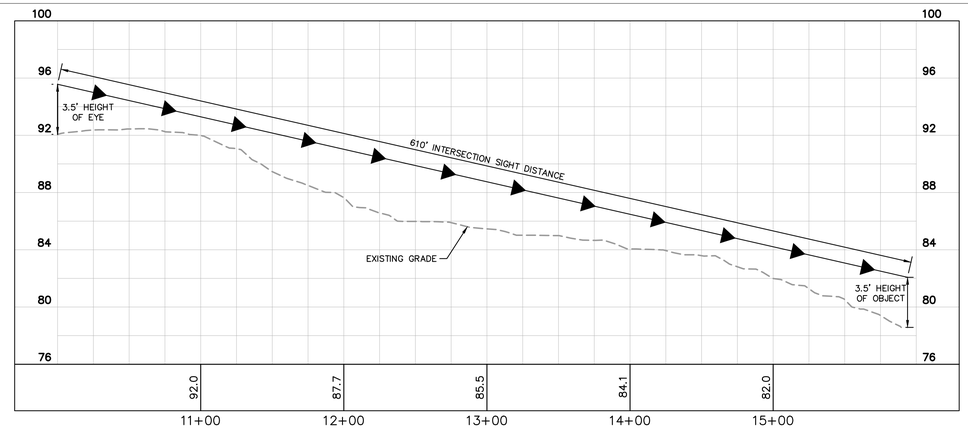
PERMANENT ENTRANCE – IVY HILL RD – SIGHT DISTANCE LEFT PROFILE VIEW



GRAPHIC SCALE IN FEET
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HORIZONTAL

0 2.5 5 10
VERTICAL

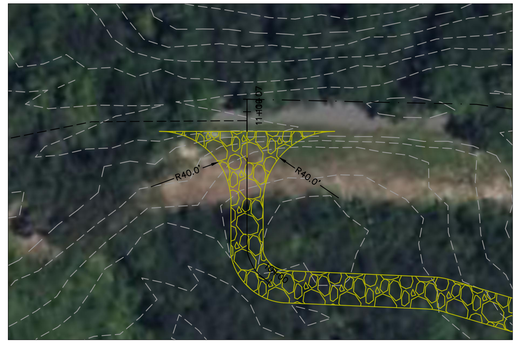
PERMANENT ENTRANCE – IVY HILL RD – SIGHT DISTANCE RIGHT PROFILE VIEW

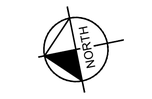


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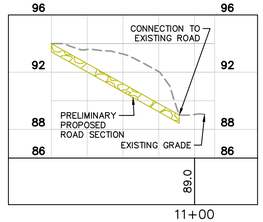
0 2.5 5 10
VERTICAL

ENTRANCE PROFILE





GRAPHIC SCALE IN FEET
0 20 40 80



GRAPHIC SCALE IN FEET
0 25 50 100
HORIZONTAL

0 2.5 5 10
VERTICAL

No.	REVISIONS	DATE	BY

Kimley»Horn
© 2023 KIMLEY-HORN AND ASSOCIATES, INC.
2035 MAYWILL ST, SUITE 200, RICHMOND, VA 23230
PHONE: 804-673-3882
WWW.KIMLEY-HORN.COM

LICENSED PROFESSIONAL

DATE:

KHA PROJECT 113526017
DATE JUNE 2024
SCALE AS SHOWN
DESIGNED BY NLR
DRAWN BY ZML
CHECKED BY MLH

ENTRANCE AND SIGHT DISTANCE EXHIBIT (SHEET 1 OF 2)

HEDERA SOLAR
PREPARED FOR
HEXAGON ENERGY, LLC

JAMES CITY COUNTY VA

SHEET NUMBER
EX-1

Plotted By:Robertson, Nicholas Sheet Set:Kha Layout:EX-1 July 01, 2024 11:35:02am K:\RIC_CIV\113526017 – Hedera Solar – James City County, VA\CAD\Exhibits\VDOT Entrance\VDOTEntrance_Hedera.dwg
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc

Typical Traffic Control
Logging Operations
(Figure TTC-63.2)
NOTES

Standard:

1. **Prior to the installation of the entrance and placement of any traffic control devices, the appropriate state/local agencies shall be notified.**

Guidance:

2. *Care should be exercised when establishing the location of the permitted temporary entrance to insure maximum possible sight distance in advance of the entrance, and should be based on the posted speed limit and at least equal to or greater than the values in Table 6G-1, Intersection Sight Distance for Construction Entrances. If the minimum distances in Table 6G-1 cannot be obtained, a flagging operation should be implemented for exiting and entering vehicles.*[2]
3. *Sign spacing distance should be 500'-800' where the posted speed limit is greater than 45 mph, and 350'-500' where the posted speed limit is 45 mph or less.*

Standard:

4. **TRUCKS ENTERING HIGHWAY (W11-V4) sign shall be used to warn of logging trucks entering roadways. LOG TRUCKS ENTERING HIGHWAY sign is not allowed for use.**[1]
5. **On divided highways having a median wider than 8', right and left sign assemblies shall be used. Median barrier is considered to be part of the shoulder and its measurement shall be used to determine the total width of the shoulder.**

Guidance:

6. *For operations that disrupt (stop) traffic on the travelway, Typical Traffic Control Figure TTC-23, Lane Closure on a Two-Lane Roadway Using Flaggers, or Typical Traffic Control Figure TTC-16 or 17, Outside or Inside Lane Closure Operation on Four-Lane Roadway, should be used.*

Standard:

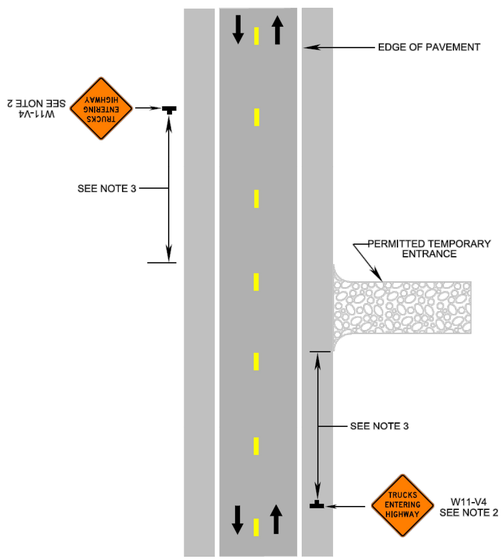
7. **Flaggers shall be state certified and have their certification card in their possession when performing flagging duties (see Section 6E.01, Qualifications for Flaggers).**
8. **The organization receiving the entrance permit shall be responsible for the removal of all debris (gravel, mud, dust, hauled materials, etc.), obstructions and irregularities caused by the operation in accordance with Section 105 of the Road and Bridge Specifications.**

Guidance:

9. *For the removal of debris on the roadway, Typical Traffic Control Figure TTC-14, Moving/Mobile Operation on a Two-Lane Roadway, or Typical Traffic Control Figure TTC-13, Moving/Mobile Operation on a Multi-Lane Roadway, should be used.*

1: Revision 1 – 4/1/2015
2: Revision 2 – 9/1/2019

Logging Operations
(Figure TTC-63.2)



Typical Traffic Control
Lane Closure on a Two-Lane Roadway Using Flaggers
(Figure TTC-23.2)
NOTES

Guidance:

1. *Sign spacing distance should be 350'-500' where the posted speed limit is 45 mph or less, and 500'-800' where the posted speed limit is greater than 45 mph.*
2. *Care should be exercised when establishing the limits of the work zone to insure maximum possible sight distance in advance of the flagger station and transition, based on the posted speed limit and at least equal to or greater than the values in Table 6H-3. Generally speaking, motorists should have a clear line of sight from the graphic flagger symbol sign to the flagger.*
3. *To maintain efficient traffic flow in a flagging operation on a two-lane roadway, the maximum time motorists should be stopped at a flagger station is 8 minutes for high volume roadways (average daily traffic of 500 or more vehicles per day) to a maximum of 12 minutes for low volume roadways (less than 500 vehicles per day). For additional information see Section 6E.07.*[2]

Standard:

4. **Portable Temporary Rumle Strips (PTRS) shall be used as noted in Section 6F.99.**
5. **Flagging stations shall be located far enough in advance of the work space to permit approaching traffic to reduce speed and/or stop before passing the work space and allow sufficient distance for departing traffic in the left lane to return to the right lane before reaching opposing traffic (see Table 6H-3 on Page 6H-5).**
6. **All flaggers shall be state certified and have their certification card in their possession when performing flagging duties (see Section 6E.01, Qualifications for Flaggers).**
7. **Cone spacing shall be based on the posted speed and the values in Table 6H-4 on Page 6H-6.**[1]
8. **A shadow vehicle with at least one high intensity amber rotating, flashing, or**[1] **oscillating light shall be parked 80'-120' in advance of the first work crew.**

Option:

8. A SLOW (W21-V10) sign[2] may be required in this area to give advance warning of the operation ahead by slowing approaching traffic prior to reaching the flagger station or queued traffic.

Guidance:

9. *If the queue of traffic reaches the BE PREPARED TO STOP (W3-4) sign then the signs, and if used the* PTRS[1] *should be readjusted at greater distances.*
10. *When a highway-rail crossing exists within or upstream of the transition area and it is anticipated that queues resulting from the lane closure might extend through the highway-rail grade crossing, the temporary traffic control zone should be extended so that the transition area precedes the highway-rail crossing (see Figure TTC-56 for additional information on highway-rail crossings).*

Standard:

11. **At night, flagger stations shall be illuminated, except in emergencies (see Section 6E.08).**

Option:

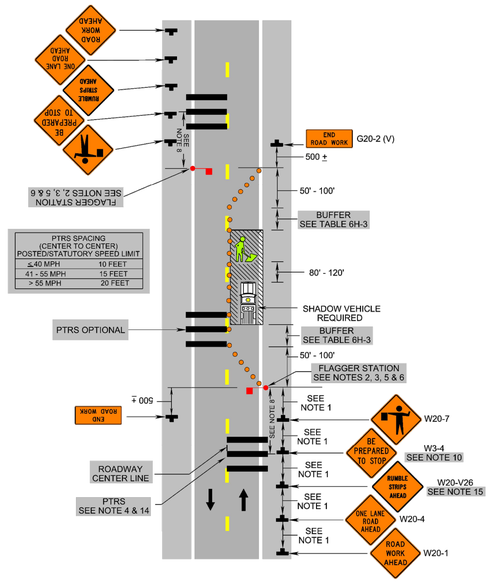
12. Cones may be eliminated when using a pilot vehicle operation or when the total roadway width is 20 feet or less.
13. For low-volume situations with short work zones on straight roadways where the flagger is visible to road users approaching from both directions, a single flagger, positioned to be visible to road users approaching from both directions, may be used (see Chapter 6E).

Standard:[1]

14. **When used**[2]**, three portable temporary rumble (PTRS) strips shall be installed across the entire travel lane adjacent to the BE PREPARED TO STOP (W3-4) sign. The portable temporary rumble strips shall be monitored and adjusted as necessary during the work shift to ensure proper placement on the roadway. When the PTRS are installed, the RUMBLE STRIPS AHEAD (W20-V26) sign shall also be utilized.**

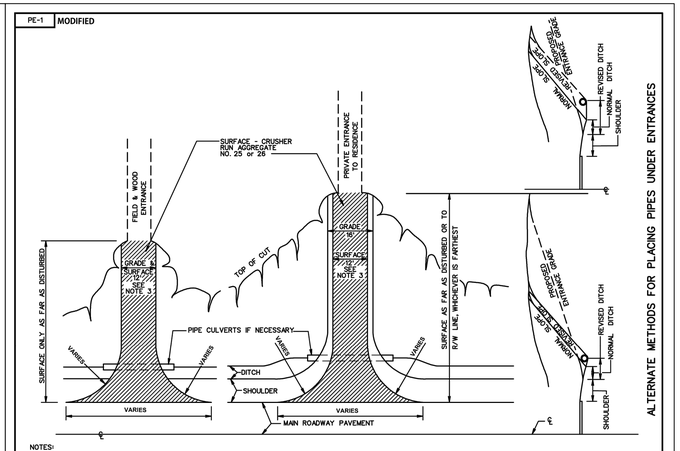
1: Revision 1 – 4/1/2015
2: Revision 2 – 9/1/2019

Lane Closure on a Two-Lane Roadway Using Flaggers
(Figure TTC-23.2)



1: Revision 1 – 4/1/2015
2: Revision 2 – 9/1/2019
3: Revision 2.1 – 11/1/2020

PE-1 MODIFIED



NOTES:
1. ALL ENTRANCE GRADES SHALL START BACK OF THE SHOULDER LINE. IF DRAINAGE IS NECESSARY, THE DITCH MAY BE MOVED BACK TO PROVIDE AT LEAST 9" OF COVER OVER PIPE, AS SHOWN IN THE ALTERNATE METHODS FOR PLACING PIPE UNDER ENTRANCES DIAGRAM.
2. ENTRANCE GRADES ARE TO BE SMOOTHLY TIED INTO THE ROADWAY BY ROUNDING AS NECESSARY.
3. 12' OR EXISTING WIDTH WHICHEVER IS GREATER.
4. LENGTHS OF CULVERTS SHOWN ON ROAD PLANS FOR ENTRANCES ARE APPROXIMATE AND SHALL BE ADJUSTED TO OBTAIN ABOVE ROADWAY WIDTHS.
5. ENTRANCES IN FILL TO BE SAME AS ABOVE EXCEPT LOCATION OF CULVERT (WHEN NECESSARY).

STANDARD PRIVATE ENTRANCES

SPECIFICATION REFERENCE: 512

REV. 9/06 602.02

VIRGINIA DEPARTMENT OF TRANSPORTATION

Plotted By: Lowicki, Zach Sheet Set: Site Layout: EX-2 June 20, 2024 02:35:44pm K:\VBC_CIV\113526017 — Hedera Solar — James City County, VA\CAD\Exhibits\VDOT Entrance\VDOTEntrance_Hedera.dwg
This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Kimley»Horn
© 2023 KIMLEY-HORN AND ASSOCIATES, INC.
2035 MAYWILL ST, SUITE 200, RICHMOND, VA 23230
PHONE: 804-673-3882
WWW.KIMLEY-HORN.COM

No.	REVISIONS	DATE	BY

LICENSED PROFESSIONAL

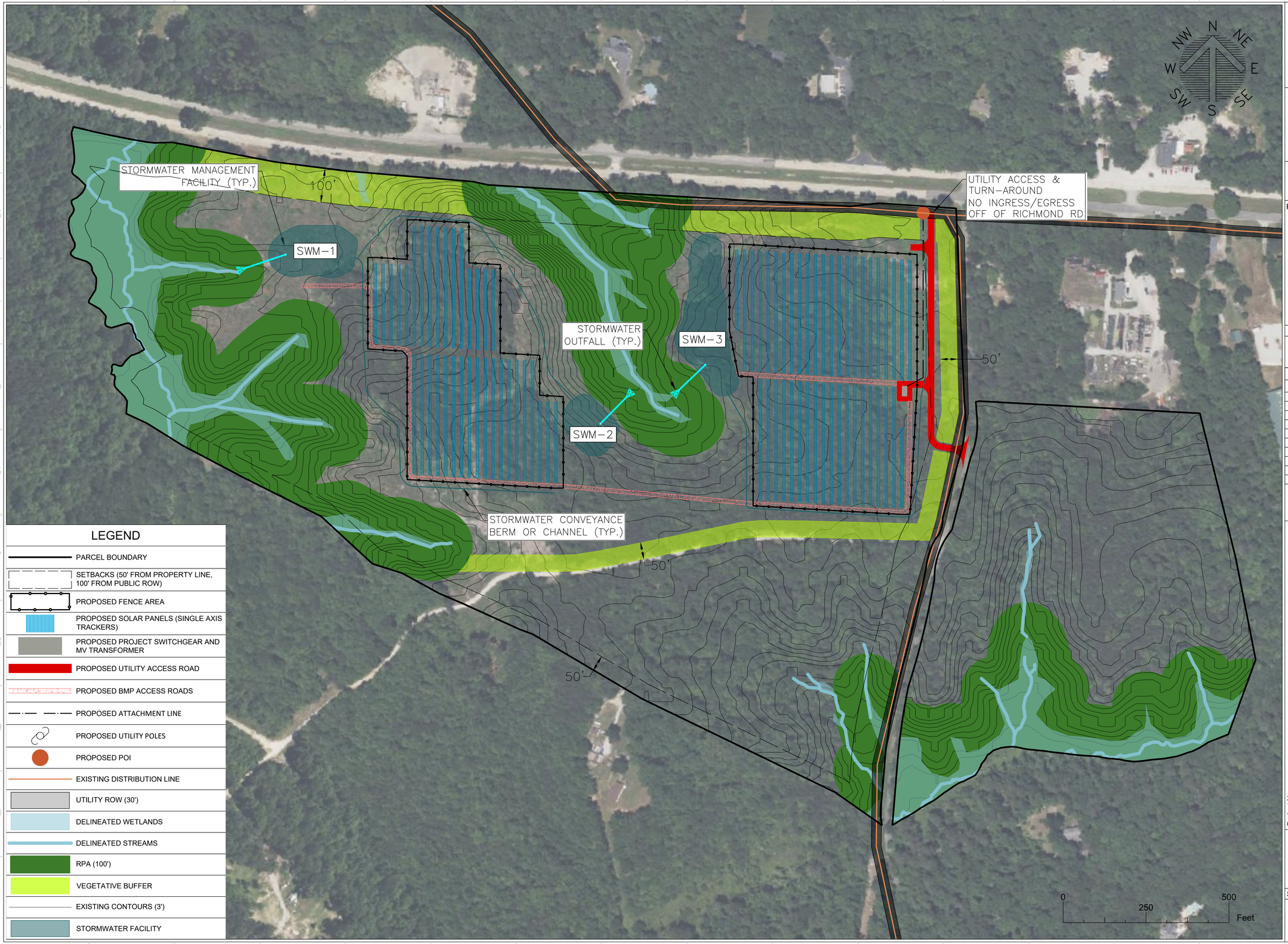
KHA PROJECT 113526017			
DATE JUNE 2024			
SCALE AS SHOWN			
DESIGNED BY	NLR		
DRAWN BY	ZML		
CHECKED BY	MLH	DATE:	

ENTRANCE AND SIGHT DISTANCE EXHIBIT (SHEET 2 OF 2)

HEDERA SOLAR
PREPARED FOR
HEXAGON ENERGY, LLC

JAMES CITY COUNTY VA

SHEET NUMBER
EX-2



LEGEND

- PARCEL BOUNDARY
- SETBACKS (50' FROM PROPERTY LINE, 100' FROM PUBLIC ROW)
- PROPOSED FENCE AREA
- PROPOSED SOLAR PANELS (SINGLE AXIS TRACKERS)
- PROPOSED PROJECT SWITCHGEAR AND MV TRANSFORMER
- PROPOSED UTILITY ACCESS ROAD
- PROPOSED BMP ACCESS ROADS
- PROPOSED ATTACHMENT LINE
- PROPOSED UTILITY POLES
- PROPOSED POI
- EXISTING DISTRIBUTION LINE
- UTILITY ROW (30')
- DELINEATED WETLANDS
- DELINEATED STREAMS
- RPA (100')
- VEGETATIVE BUFFER
- EXISTING CONTOURS (3')
- STORMWATER FACILITY

HEXAGON ENERGY

HEXAGON ENERGY, LLC
321 E. Main St, Suite 500
Charlottesville, VA 22902
Phone: 434.227.5090
Website: www.hexagon-energy.com

Professional Engineer:

PE Seal:

DRAWING TYPE

- ☐ Preliminary
- ☐ Customer Approval
- ☒ Permitting
- ☐ Construction
- ☐ As-built
- ☐ Other

REVISIONS

Rev	By	Description	Date
0	EO	SITE MAP	12/18/2023
1	VC	PRELIMINARY SITE PLAN	5/8/2024
2	VC	INCORPORATE STORWATER MANAGEMENT	5/29/2024
3	VC	UPDATE LAYOUT	6/3/2024
4	VC	ADD PRIME SOILS	6/7/2024
5	VC	ADD DETAILED STORMWATER PONDS	6/20/2024
6	EO	MOVE POI	6/27/2024
7	EO	PERMIT PLAN	7/8/2024
8	EO	ADD BMP ACCESS ROADS	9/19/2024
9	EO	ADD COVER SHEET & REVISE ENTRANCE	10/7/2024

Project Name: HEDERA SOLAR, LLC 3MWac

Site Address: IVY HILL RD TOANO, VA 23168 37.402° N, -76.843° W

Sheet Name: ALTERNATE ENTRANCE

Scale:

Project ID: TBD

Sheet No: EX1.1

Kimley»Horn

MEMORANDUM

To:	Ester Rekhelman – Hexagon Development, LLC
From:	Nicholas Robertson, P.E., PMP – Kimley-Horn
Date:	June 4, 2024
Subject:	Hedera Solar – Traffic Memorandum

1 INTRODUCTION

1.1 Project Background

As requested by Hexagon Development, LLC., Kimley-Horn and Associates, Inc. (Kimley-Horn) has prepared a traffic memorandum to support the future, proposed Solar Photovoltaic (PV) Generation Facility located on the Hedera Solar Site in James City County, Virginia. The project site is located on State Route 60 (Richmond Road) at the intersection with State Route 657 (Ivy Hill Road).

This memorandum is based on publicly available data from VDOT and from information provided by Hexagon Development, LLC.

The purpose of this memorandum is to address potential concerns related to traffic generated by the construction of the proposed project. The memorandum includes analysis of the following:

- Review of existing transportation facilities (i.e., roadways) providing access and/or adjacent to the proposed solar site
- Compiling available traffic data for the roadways
- Discussing trip generation and traffic impacts for the proposed site during construction operations

2 EXISTING CONDITIONS

2.1 ADJACENT ROADWAYS

The following provides a brief description of existing roadway characteristics for each facility:

2.1.1 State Route 657 (Ivy Hill Road)

State Route 657 is a two-lane, local roadway that runs in an approximate north/south direction within the study area. It primarily serves residential and agricultural land uses. The 2022 VDOT AADT and Vehicle Classification Estimates data indicate that State Route 657 (Ivy Hill Road) carries approximately 250 vpd. There is no posted speed limit for State Route 657 so the statutory speed limit of 55 MPH and 45 MPH for trucks applies.

2.1.2 U.S. Route 60 (Richmond Road)

U.S. Route 60 is a four-lane, divided minor arterial that runs in an approximate east/west direction within the study area. The 2022 VDOT AADT and Vehicle Classification Estimates data indicate that U.S. Route 60 carries approximately 6,800 vpd, including less than 3% heavy vehicles along the section of the roadway between the New Kent County Line and State Route 30 North of Toano. This stretch of U.S. Route 60 has a posted speed limit of 55 MPH.

2.1.3 State Route 155 (N Courthouse Road)

State Route 155 is a two-lane, undivided minor arterial that runs in an approximate north/south direction within the study area. The 2022 VDOT AADT and Vehicle Classification Estimates data indicate that State Route 155 carries approximately 3,700 vpd, including less than 8% heavy vehicles along the section of roadway between I-64 and U.S. Route 60. This stretch of State Route 155 has a posted speed limit of 45 MPH when exiting I-64 and then it increases to 55 MPH once you are past the Kentland Trail intersection. The speed limit drops back down to 45 MPH at the intersection with Marsh Road. There are overhead lines that cross this roadway.

2.2 STUDY MAJOR INTERSECTIONS

The route to the site for construction and operations/maintenance is proposed to travel from Interstate 64 via State Route 155, with traffic turning left at U.S. Route 60. From U.S. Route 60, traffic will turn right on State Route 657. Access to the proposed development site will utilize a proposed access road located off State Route 657 approximately 0.1 miles south of the intersection with U.S. Route 60.

2.2.1 State Route 155 at Kentland Trail

The unsignalized intersection of State Route 155 and Kentland Trail is a roundabout. The intersection appears to have sufficient sight distance. A search of the previous five years of VDOT crash data for this intersection show that the intersection was converted to a roundabout sometime between 2021 and 2022. Since its conversion there have been five angle collisions with property damage only. This intersection appears to be able to safely support the Hedera Solar development traffic which is shown below in Section 3.

2.2.2 State Route 155 at U.S. Route 60

The signalized intersection of State Route 155 and U.S. Route 60 appears to have sufficient sight distance. Construction vehicles would be turning left at this intersection utilizing the left turn lane. There are overhead lines crossing State Route 155 and U.S. Route 60 at this intersection. A search of the previous five years of VDOT crash data for this approach at the intersection showed an angle collision in 2022 and 2024 with property damage only and in 2022 with a visible injury. This intersection appears to be able to safely support the Hedera Solar development traffic which is shown below in Section 3.

2.2.3 U.S. Route 60 at Waterside Drive

The unsignalized intersection of U.S. Route 60 and Waterside Drive appears to have sufficient sight distance. A search of the previous five years of VDOT crash data for this intersection showed no collisions. This intersection appears to be able to safely support the Hedera Solar development traffic which is shown below in Section 3.

2.2.4 U.S. Route 60 at Ivy Hill Road

The unsignalized intersection of U.S. Route 60 and Ivy Hill Road appears to have sufficient sight distance. However, “Trucks Entering Highway” (VDOT Work Area Protection Manual W11-V4) warning signs are recommended to be used in advance of State Route 657 on U.S. Route 60 during the construction period of the proposed site. Given that there is no existing right turn lane on U.S. Route 60 in this location, it is recommended that additional warning signs be utilized during construction to warn of slow-moving vehicles. There are overhead lines crossing U.S. Route 60 and State Route 657 at this intersection. A search of the previous five years of VDOT crash data for this intersection showed no collisions. This intersection appears to be able to safely support the Hedera Solar development traffic which is shown below in Section 3.

2.2.6 Site Driveway

The site will be accessed via a proposed entrance on State Route 657 approximately 0.1 miles south of the intersection with U.S. Route 60. There appears to be sufficient sight distance at this intersection. It is recommended that “Trucks Entering Highway” (VDOT Work Area Protection Manual W11-V4) warning signs be used in advance of the driveway on State Route 657 during the construction period of the proposed site.

3 SITE-GENERATED TRAFFIC

General construction traffic will consist of the following:

- Component deliveries (i.e., solar panels, earthwork equipment, construction waste removal, modules, etc.) via single-unit and/or low-boy trucks
- Passenger vehicles carrying personnel, tools, and minor equipment to and around the proposed development site

Construction is anticipated to last approximately three to four months with the intensity of trucks and employees accessing the site varying over the course of construction. The first and final months of construction are anticipated to average less than one truck per day. The peak construction period is expected to occur during the one-to-two-month period in the middle of construction. During the first half of the peak construction period, the site is estimated to experience one truck per day (i.e., weekdays Monday – Friday) delivering materials. Deliveries are anticipated to be staggered to meet construction needs and will attempt to occur during the non-peak travel periods.

In addition, the construction site is expected to have an estimated 20 employees during the peak period of construction. It’s expected that some employees will carpool to the site; an average vehicle occupancy of 1.5 was assumed. As a result, 14 passenger vehicle trips will access the site per day during the peak period of construction. All construction staging, parking, and assembly areas are anticipated to be within the project boundaries.

Following the construction of the site, maintenance of the site will occur on a monthly, quarterly, and annual basis for different circumstances. Panel washings and general maintenance are anticipated to occur a few times a year. This will require the presence of approximately 2 workers at the site occasionally throughout the year. During the growing season, it is anticipated that a maximum of one vehicle per week will access the site for lawn maintenance. Therefore, operation and maintenance of the site is not expected to generate significant traffic volumes or volumes to the level expected during the construction phase of the project.

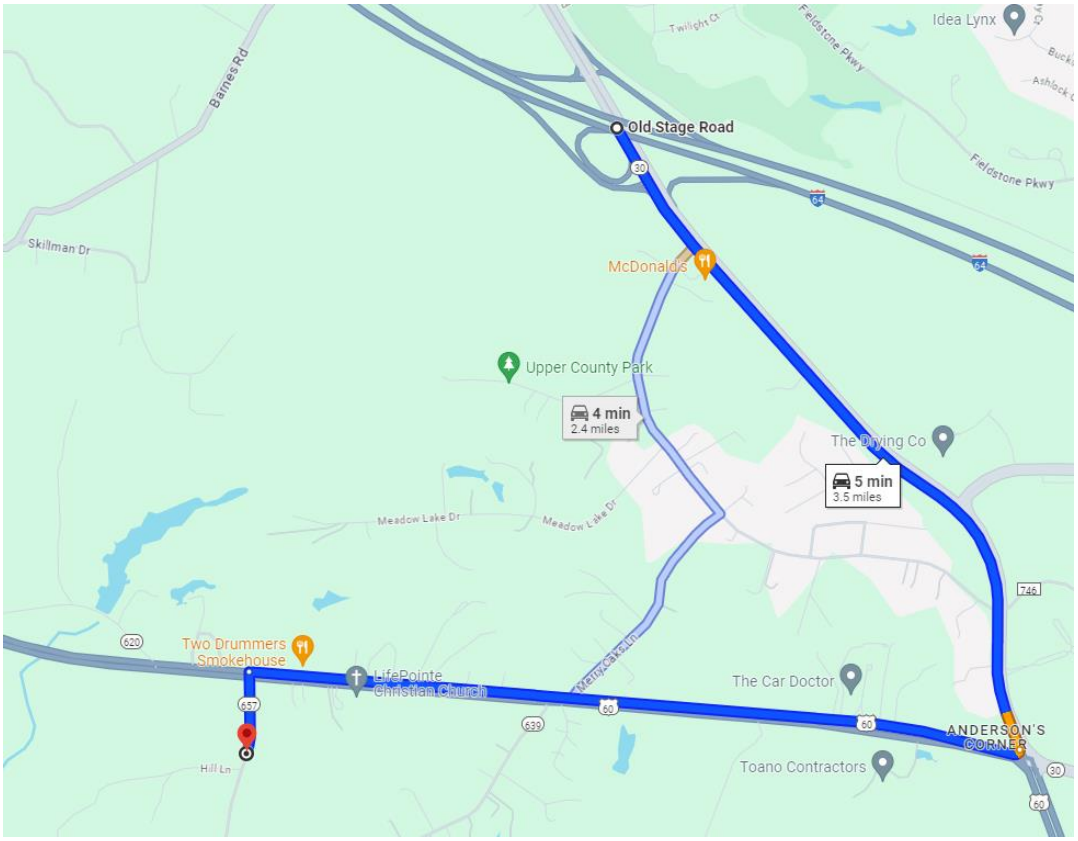
All the site generated trucks and the majority of the employee traffic are expected to travel to/from the site entrance on via the route described in Section 2.2. The study area roadways have adequate capacity to support the increase in trips during the site construction and ongoing maintenance.

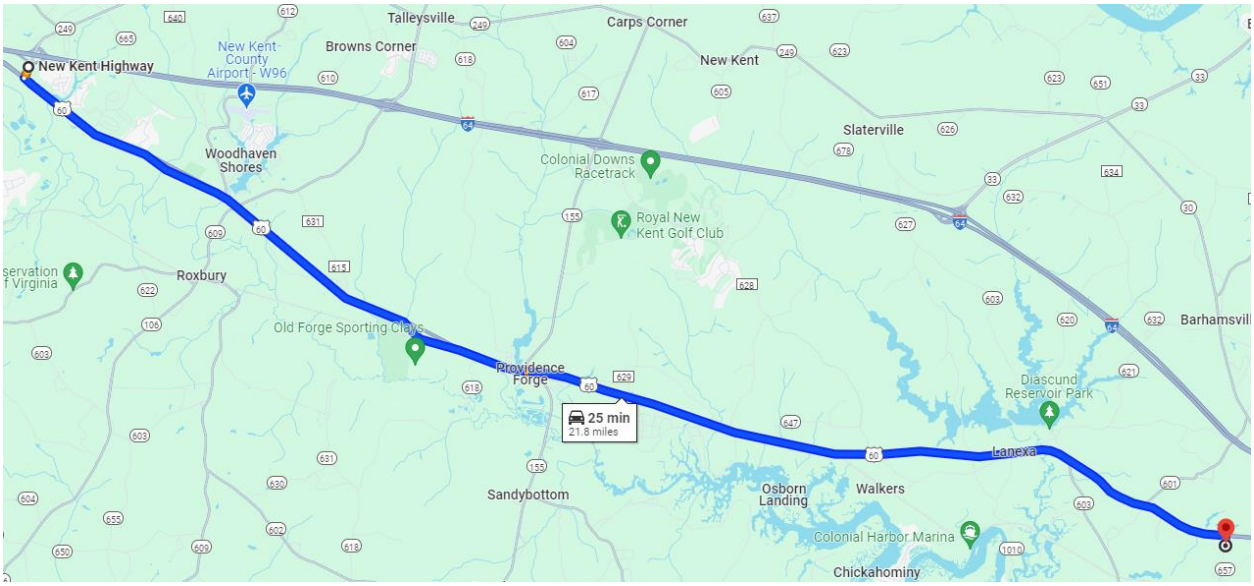
4 CONCLUSIONS AND RECOMMENDATIONS

Based on the proposed site access driveway location and anticipated traffic operations associated with the proposed Hedera Solar development, we offer the following conclusions and recommendations:

- A Construction Traffic and Access Management Plan should be developed in advance of the construction phase of the project to establish safe and feasible routing, signage, and other measures to address the findings in this memorandum. This process should include conversations with the County to minimize impacts to school traffic and provide opportunities for input and coordination with local emergency services. Preparation of the plan shall include consideration of the following: (i) prescribing truck routes to/from the project site, (ii) details of traffic safety signage plan, (iii) limiting impacts to residents and community events, and (iv) Emergency services access to the site.
    - It is recommended that a full geometry analysis be performed of all roadways and intersections to ensure they can accommodate all necessary construction traffic. This should include turning radius analysis.
- A Transportation Management Plan (TMP), as required by VDOT IIM-LD-241.7, should be developed to identify work zone impacts in an effort to promote work zone mobility in a manner that is safe for both motorists and construction personnel.
- The State Route 155 and Kentland Trail intersection appears to be able to safely support the Hedera Solar development traffic.
- The State Route 155 and U.S. Route 60 intersection appears to be able to safely support the Hedera Solar development traffic.
- The U.S. Route 60 and State Route 657 intersection appears to be able to safely support the Hedera Solar development traffic.
    - Warning signs are recommended along U.S. Route 60 in advance of the State Route 657 intersection to advise drivers (i.e., to advise drivers approaching the intersection from both directions) of potential turning vehicles during construction of the site and to warn of slow-moving vehicles.
- Site traffic will access the site via the proposed driveway located along State Route 657.
    - It is recommended that the construction entrance driveway be constructed wide enough to accommodate WB-67 trucks accessing the site.
    - Warning signs are recommended along State Route 657 in advance of the proposed driveway to advise drivers (i.e., to advise drivers approaching the intersection from both directions) of potential turning vehicles during construction of the site.
- Analysis is recommended along the proposed route to ensure the overhead lines are not in conflict with any necessary construction traffic.

- Alternative routes to the site are shown below and include taking the Barhamsville Road Exit off or the New Kent Highway Exit off of I-64.
- Up to 20 employees are anticipated during the peak period of construction. Approximately 1 truck per day is also anticipated to deliver materials to the site during the peak period of construction. The study area roadways have adequate capacity to support this increase in traffic volume during the construction of this site.
- If all construction staging, parking, and assembly areas cannot be accommodated within the project boundaries, coordination should take place during the permitting phase with the County to make alternative arrangements that will limit impacts to the surrounding community.
- Prior to beginning construction, it is suggested to coordinate with VDOT to perform a field assessment to document existing conditions of the construction route roadways and intersections. In addition, it is important to coordinate closely with VDOT and the County throughout the construction phase to mitigate potential impacts to traffic operations on the local streets and/or to travel through the area by residents.
- VDOT will require a surety bond to be posted to protect the integrity of the roadway pavement and the developer will be responsible for ongoing maintenance during construction as well as repairs post construction.




New Kent Highway
New Kent County Airport - W96
Talleysville
Browns Corner
Carps Corner
New Kent
Slaterville
Woodhaven Shores
Colonial Downs Racetrack
Royal New Kent Golf Club
Roxbury
Old Forge Sporting Clays
Providence Forge
25 min
21.8 miles
Diascund Reservoir Park
Lanexa
Sandybottom
Osborn Landing
Walkers
Colonial Harbor Marina
Chickahominy

APPENDIX T: RESPONSE TO STAFF COMMENTS

Organization	James City Comment	Hexagon Response
James City County Fire Marshal's Office	1205.5 Ground-mounted photovoltaic arrays. A clear, brush-free area of 10 feet (3048 mm) shall be maintained for ground-mounted photovoltaic arrays. -1205.5.1 Vegetation control. A clear, brush-free area of 10 feet (3048 mm) shall be required around the perimeter of the ground-mounted photovoltaic arrays. A maintained vegetative surface or a noncombustible base, approved by the fire code official, shall be installed and maintained under the photovoltaic arrays and associated electrical equipment installations.	Our current site plan has 18' between the photovoltaic array and the fence, and 20' between the fence and the buffer. These distances can be found attached in the permit plan in Appendix B. The vegetative surface underneath the panels will be made up of a mixed grass, the species of which will be chosen before final site plan approval and will take into account fire marshal input on combustibility. Section 5.4 of Narrative
James City County Fire Marshal's Office	While not specifically required in the VA SFPC Fire would request that once construction of the solar farm is completed, or just prior to completion, the applicant or designee make themselves available to provide a site walk-thru to the staff at Fire Station 1 and Fire Administration. This could be accomplished in (3) calendar days of on-site training to reach all shifts assigned to Fire Station 1. This training should cover topics such as common risks, electrical hazards and mitigation	Applicant agrees for this to be added into the conditions of the SUP. See Appendix P, proposed Condition 12.

	techniques, site access for fire fighting efforts, etc.	
Jose Ribeiro, Senior Planner II/ Landscaping	Perimeter buffer. Staff will likely propose language for a SUP condition to increase the width of perimeter buffer. A perimeter buffer of 50 feet shall be provided along the perimeter of the site. The perimeter buffer shall increase to 75 feet along the boundary of the property with Richmond Road and adjacent to developed properties. Staff may also require an enhanced landscape (i.e. taller trees at the time of planting, additional evergreens, etc.)	Perimeter buffer has been updated to reflect 75 feet along the boundary of the property with Richmond Rd. Please see Appendix B for Master Plan. Enhanced landscaping can be added in coordination with staff during site plan approval. See Appendix B and Section 3.2 of Narrative.
Jose Ribeiro, Senior Planner II/ Landscaping	BMP Screening. Please note that stormwater management facilities, detention ponds, and best management practices (BMPs) that are visible from roads, adjoining properties, or open to public view shall be designed in accordance with Section 24-100 (f).	All BMPs are well screened by the site's vegetative buffer as seen in Appendix B; therefore, Applicant does not expect BMPs to be visible from public roads. If BMPs are visible from public roads, they will be designed in accordance with Section 24-100.
Jose Ribeiro, Senior Planner II/ Landscaping	If buildings/structures and parking spaces are proposed, please refer to Section 24-97 and 24-99 of the zoning ordinance.	Not applicable to site
Stormwater and Resource Protect Division	RPA. Submitted delineation will be reviewed and approved under separate Chesapeake Bay Preservation Area (CBPA)	Under review

	review cover. Final determination may affect the presented layout of the solar project.	
Stormwater and Resource Protect Division	Fencing. Presented information indicates that stormwater facilities will be outside the fenced area. Please ensure the VRRM analysis includes the full extents of the project needs and not just the area bounded by the fence.	Confirmed, VRRM analysis includes full extents of project needs and not just area bound by fence. See Appendix I and Section 3.5 of Narrative.
Stormwater and Resource Protect Division	Mixed Open Land Cover. The water quality discussion of the narrative indicates the use of the mixed open space land cover. Areas designated as such must meet all criteria set forth in the Virginia Stormwater Management Handbook.	Confirmed via video call with James City County Stormwater and Resource Protection Division held on 09.13.2024 that all criteria set forth in the Virginia Stormwater Management Handbook will be met. An additional exhibit (EX-4) was added to Appendix I to illustrate landcover classifications used in the VRRM model for water quality. See Appendix I and Section 3.5 of Narrative.
Stormwater and Resource Protect Division	Pond Outfalls. Extend pond outfalls to the limits of wetlands to avoid future erosion impacts. This will require modification of the shown limits of disturbance and VRRM analysis at the time of site plan submittal.	Please see Appendix B, Master Plan, and Appendix I, SWM/ECS VRRM Analysis, for these modifications.
Stormwater and Resource Protect Division	Decommissioning Cost Estimate. This estimate should not include salvage	Please see updated Decommissioning Cost Estimate in Appendix O.

	value of any components related to the solar farm.	
Stormwater and Resource Protect Division	Suggested Special Use Condition: Virginia Runoff Reduction Method. The Forested Open Space (the "FOS") land use category may be used to account for a maximum of 25% of the required water quality associated with the proposed development. The purchase of offsite nutrient credits toward needed water quality associated with the Facility will not be allowed. Should FOS or Mixed Open be used in the Virginia Runoff Reduction Method calculations, the area(s) must meet the criteria set forth in Virginia Stormwater BMP Clearinghouse or the Virginia Stormwater Management Handbook equivalent. The declared area(s) must treat sheet flow from the Facility, in accordance with the Virginia Stormwater BMP Clearinghouse design specification criteria. The proposed use of FOS or Mixed Open Space on the Property, disconnected from any drainage patterns of the Facility, will not be allowed.	The Developer spoke to the Planning and Stormwater and Resource Protection Division Staff to discuss this specific special use condition. We would like further clarification on the phrasing of this condition. The way it is written classifies the new "Mixed Open" category in the VRRM in the same bucket as "Forested Open Space" (FOS). However, they have drastically different phosphorous loading rates and where having additional FOS land within the Project helps decrease the phosphorous reduction requirement, that is not the case for included "Mixed Open" within the Project. Specifically, regarding the two sentences: *"Should FOS or Mixed Open be used in the Virginia Runoff Reduction Method calculations, the area(s) must meet the criteria set forth in Virginia Stormwater BMP Clearinghouse or the Virginia Stormwater Management Handbook equivalent. The declared area(s) must treat sheet flow from the Facility, in accordance with the Virginia Stormwater BMP*

		Clearinghouse design specification criteria." We don't believe the "Mixed Open" category is intended to be used as a water quality treatment methodology. It is another land category that has a smaller phosphorus impact than managed turf because the phosphorus loading rate for managed turf drastically increased in the new VRRM. In our conversations with the SRP, they agreed with our interpretation of "Mixed Open" in our calculations, we hope that the updated Ex-4 in Appendix I clarifies this further.
James City County Community Development, Planning, Zoning, Building & Safety Permits, and Neighborhood Development	Definition: Per the draft policy, this facility would not be considered a community solar facility, as it is intended to contribute to the grid more widely than a select number of owners/subscribers. Please correct any references to a community scale solar facility in your literature.	Changes made in narrative. It is important to note that this project may be part of the Shared Solar Program in Virginia that provides bill reductions through net metering to multiple subscribers in the area.
James City County Community Development, Planning, Zoning, Building & Safety Permits, and Neighborhood Development	Distance to Neighbors (#4): Per page 7 of the application binder, one neighboring residence is 250' away from the fenceline of the project. Please confirm this distance. Additionally, it may be helpful to	The neighboring residence at 100 Ivy Hill Road is 250 feet away from the proposed fenceline of the solar facility based on the Master Plan. The owner listed for 100 Ivy Hill Road is Amber Lynn Clark. A letter was sent to Ms.Clark on 06/06/2024, see attached in

	show distances to neighboring structures on one of your exhibits. It may also be helpful to provide a statement from the neighbor to verify that, as stated in your application, you have been working with them to provide (or have already found) a suitable solution to the issue of proximity.	Appendix R. The letter was pertaining a community canvasing campaign in which the lead developer, Ester Rekhelman, and another Hexagon employee went out on site to meet the adjacent neighbors of the Hedera Solar Property. Ms.Clark did not respond to the letter, and Ester Rekhelman knocked on her door. No adult was present when Ester Rekhelman knocked on the door, so a note was left from Hexagon Energy. Another letter was sent to Ms.Clark inviting her to a community meeting hosted by Hexagon Energy on 07/09/2024. Several neighbors arrived at the community meeting, and Ms.Clark was in attendance. A third letter was sent via certified mail to Ms.Clark's residence on 10/01/2024, requesting her outreach to Hexagon Energy for feedback on the proposed development. The tracking number and letter can also be found in Appendix R. While no correspondence with Ms.Clark has elicited a response, the proposed Master Plan ensures a 50' dense vegetative buffer along Ivy Hill Road that will protect Ms.Clark's viewshed for the lifetime of the project.

		Lastly, Appendix S shows individualized maps outlining the distances of each of the residences around Hedera Solar from the proposed fenceline.
James City County Community Development, Planning, Zoning, Building & Safety Permits, and Neighborhood Development	Minimum Siting Distance and Buffering (#5): Per our earlier conversations, staff notes the buffer averages to around 75' of vegetative buffer from both Richmond Road and Ivy Hill Road. The policy calls for a minimum of 100'. Please see landscape comments for further information regarding buffering. Additionally, as discussed, this site appears to be approximately .95 miles from the fenceline of the nearest neighboring solar facility, while the draft policy recommends a distance of one mile between facilities. Staff acknowledges that this distance is approximate, as that fenceline is not yet built and could shift, and also notes guidance from Stormwater and Resource Protection regarding the sensitive soils and steep slopes interior to the project area that make the fenceline difficult to shift.	After discussions with James City County Staff, we were able to amend our Conceptual Master Plan to include a vegetative buffer of 75' in width off of Richmond Road. This can be seen in the updated Appendix B. The Developer also did an updated analysis of the distance between the Project fenceline and the nearest neighboring solar facility. The nearest neighboring solar facility is Suntribe Solar's Richmond Road Solar. As mentioned in the comment, Richmond Road Solar's Site Plan is not yet finalized and therefore the 0.95-mile distance between project fencelines was based on the Master Plan provided by Richmond Road Solar in their SUP submission. Over the last two months, Richmond Road Solar submitted a draft Site Plan to the County. Based on the fenceline measurements, Hedera Solar's fenceline is 5025 feet away from Richmond Road Solar, which is 255 feet less than 1

		mile. A 255' shift of the eastern array of Hedera Solar to the west would place the panels in areas of steep slopes and sensitive soils that lead to a wetland. Based on guidance from the SRP to avoid such areas and to minimize the grading necessary for this Project, the Developer believes keeping the fenceline in its current position has the smallest environmental footprint. Despite not meeting the 1 mile distance requirement of the draft Solar Facilities Policy, Hexagon believes the benefit to public welfare provided by avoiding the steep slopes and sensitive soils outweigh the benefit that is created by moving the array west to meet the 1 mile spacing requirement. Lastly, it is worth noting that these measurements between project fencelines can change and even decrease given that the Richmond Road Solar project is still going through Site Plan modifications and the fenceline location has not been finalized. See Appendix R for distance map between nearest solar facility and Hedera Solar's fenceline.

James City County Community Development, Planning, Zoning, Building & Safety Permits, and Neighborhood Development	Prime Farmland: The draft policy states that facilities should avoid, to the maximum extent possible, the use of any prime farmland. Staff notes that 15 acres of the project area is located on soils designated prime farmland—including 7.6 acres inside the fenceline. Please provide clarification on how you are meeting this guidance, including any information on factors that may limit use of the site on areas not designated prime farmland. Additionally: • If it is not the applicant's intent to disturb all of the remaining 7.4 acres of prime farmland inside of the project area (but outside of the fenceline), please be more specific about what will be disturbed and what will be left intact. The policy is concerned with disturbance, rather than location within a general area. Is this disturbance limited to roads and BMPS? Will any of this disturbance be more temporary than the disturbance inside the fenceline? • The policy states that any disturbance should be mitigated. Please provide more information	Given this comment and conversations with the staff, the Developer recalculated how many acres of soils designated as prime farmland are impacted by the project, including areas within the fenceline, roads both internal and external to the fenceline, and stormwater facilities. The results showed that 8.5 acres of prime farmland will be disturbed within the fenceline, and an additional 1.4 acres will be disturbed outside of the fenceline due to roads and stormwater facilities necessary on the site. This would total 9.9 acres of disturbed prime farmland on the Property, and 18.7 acres of undisturbed prime farmland on the Property. The Developer will also clarify that all areas that are disturbed for the Project, both inside and outside the fenceline, are not being permanently disturbed, if the definition of temporary disturbance is the ability to bring the land back to its previous conditions after decommissioning of the Project. The Developer acknowledges the draft policy's guidance to avoid prime farmland to the maximum possible extent.

	on mitigation measures. For example, as these prime farmland soil acres will be disturbed, is the applicant taking any measures to ensure to mitigate disturbance with onsite actions and/or the conservation of the remaining prime farmland soils on the site? Conservation could be provided in the form of a dedicated easement or land donation.	The Developer would like to note that the current use of the Property is as a timber plantation that is cleared every few decades and replanted. Additionally, the timber is commercially grown, meaning that the ground is sprayed to promote growth and eliminate certain species, likely worsening soil health rather than benefitting it. It has not been used for traditional farming in the past, and there are no plans for it to be converted to a traditional farming operation in the future. Additionally, it can be seen in Appendix B, L1.5 Soil Map, that the areas of prime farmland are not contiguous throughout the Property. Most areas that are not designated as prime farmland throughout the Property are wetlands or areas of steep slopes and sensitive soils. Additionally, the largest contiguous area of prime farmland in the center of the Property is bisected by Hill Lane, a private road used by residents near the Property. Given the Developers attempt to avoid steep slopes and sensitive soils around the wetlands, per County SRP guidance, the areas where the solar facility can be placed are

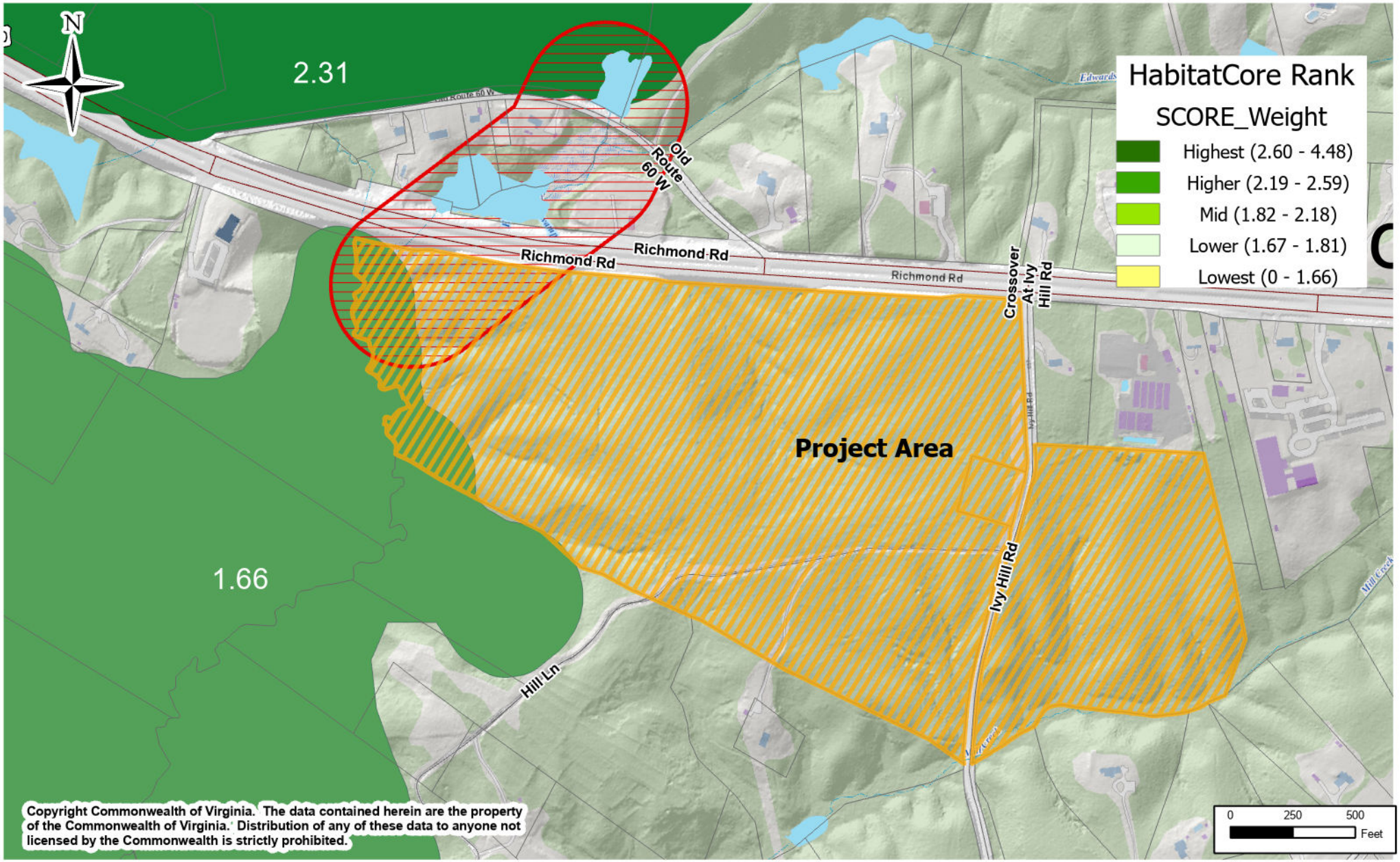
		limited to those areas containing prime farmland. Mitigation: The Developer is avoiding disturbance of 18.7 acres of prime farmland on the Property. To mitigate for temporary disturbance on the remaining 9.9 acres, pollinator-friendly species will be planted as groundcover based on the seed mix is available. This will promote healthy soils throughout the lifetime of the Project and help restore nutrients that may have been lost after decades of industrial timber farming. See also, Appendix B (L1.5), and Section 4.5 of narrative.
James City County Community Development, Planning, Zoning, Building & Safety Permits, and Neighborhood Development	Infrastructure Upgrades (#13): Please provide an update on your work with Dominion to identify any such needs in relation to the project.	The Project is in the Dominion Energy Interconnection Study process. Based on early scoping calls with Dominion Energy, it was indicated that due to existing capacity at both the Toano substation and the distributed generation power lines running from the Project to the Toano substation, there will likely be no significant infrastructure upgrades or necessity to build additional electrical infrastructure to support this project.

		See Section 2.5 and 5.2 of Narrative
James City County Community Development, Planning, Zoning, Building & Safety Permits, and Neighborhood Development	Access (#16): Staff notes the care the applicant has taken to ease traffic concerns along Richmond Road and to avoid use of the existing, private road on the property which serves several residences. That said, the policy discourages the use of any local roads which do not meet current VDOT standards. Ivy Hill Road does not meet current VDOT standards and would need to be brought up to those standards, to the entrance of the project, in order to meet this requirement.	After conversations with staff about the proposed Project entrance at Ivy Hill Road, the Developer has decided to move the entrance shown on the Master Plan to Richmond Road. An updated entrance on Richmond Rd would require a 50' wide portion of the buffer along Richmond Road to be removed to accommodate an entrance and VDOT site distance requirements for construction entrances. This can be seen in the updated Master Plan in Appendix B. The developer would also like to note the reasons why an entrance on Ivy Hill was originally chosen. Firstly, an entrance on Ivy Hill Rd would avoid visual impacts to individuals driving by on Richmond Road. Secondly, it would likely minimize traffic on Richmond Road during construction due to vehicles entering and exiting the Site. Lastly, the Ivy Hill Rd entrance was located such that it would avoid use of a private ingress egress, Hill Lane, that some neighbors of the Project use. The developer would also like to note that while the

		updated SUP Master Plan shows an entrance on Richmond Rd, the Project can still accommodate an entrance on Ivy Hill Rd if that is what the Planning Commission and Board of Supervisors prefer. A conceptual plan of an entrance on Ivy Hill Rd can be found in Appendix S. If an entrance on Ivy Hill Road is preferred, we request that the Planning Commission and Board of Supervisors add this change through a condition of the SUP. If the Planning Commission and Board of Supervisors prefer an entrance on Ivy Hill Rd, the developer agrees to bring Ivy Hill Road up to VDOT standards, as mentioned by the staff. See also Appendix B and Section 3.2 and 5.3 of Narrative.

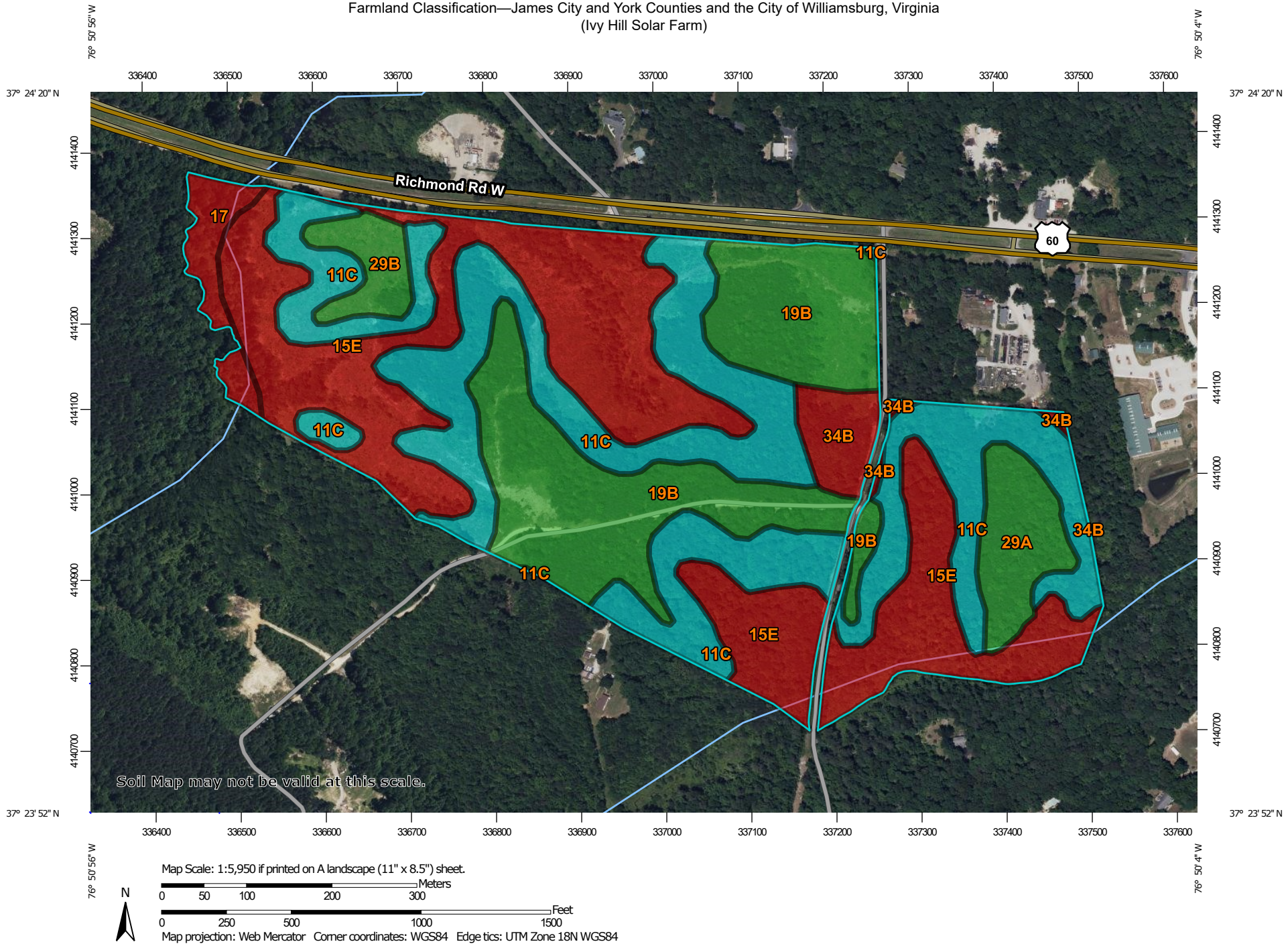
JCC-SUP-24-0016

Habitat Cores and Corridors



Copyright Commonwealth of Virginia. The data contained herein are the property of the Commonwealth of Virginia. Distribution of any of these data to anyone not licensed by the Commonwealth is strictly prohibited.

Farmland Classification—James City and York Counties and the City of Williamsburg, Virginia
(Ivy Hill Solar Farm)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

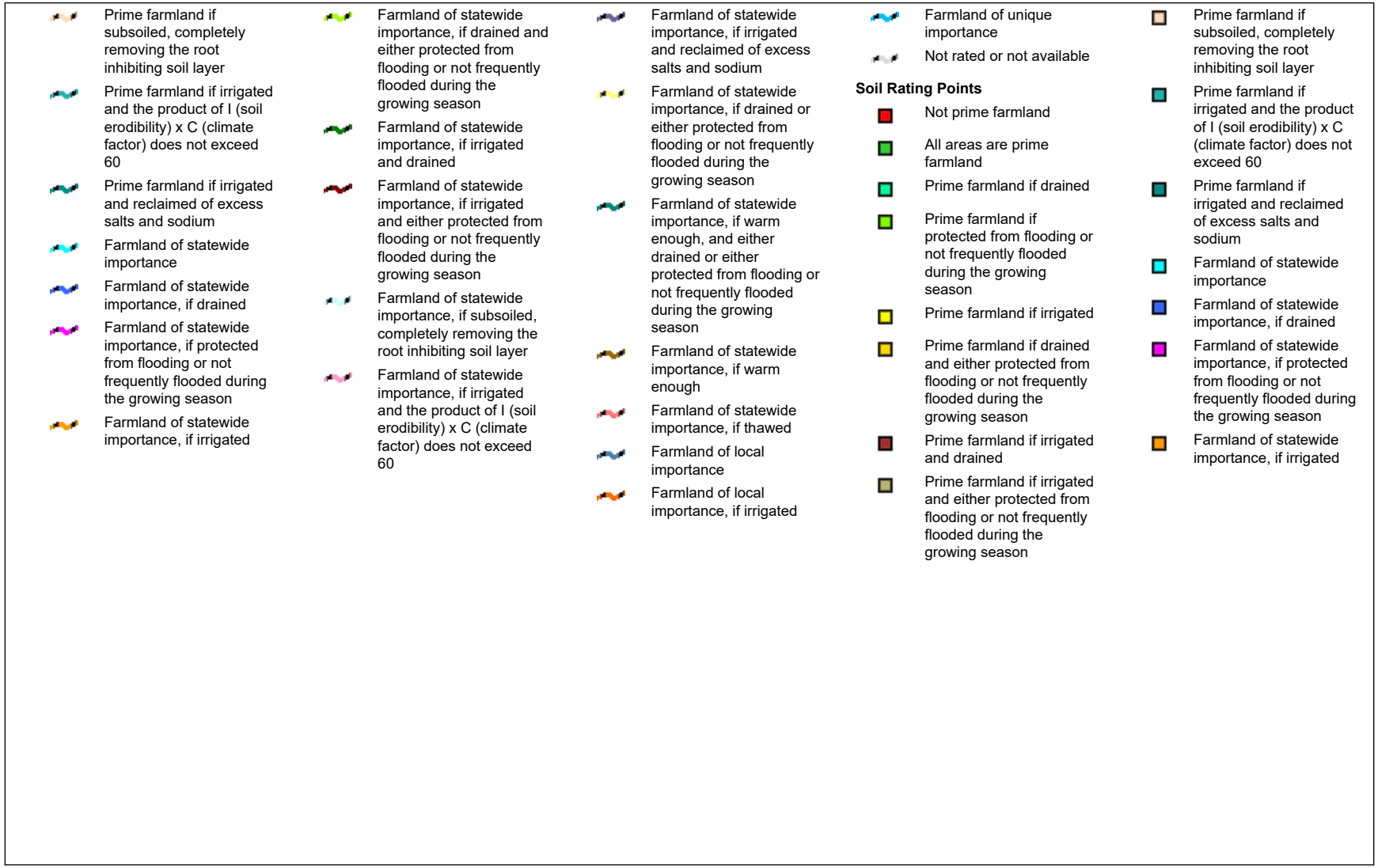
Soils

Soil Rating Polygons

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of statewide importance, if drained
- Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated
- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
- Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Soil Rating Lines

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season


Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated
Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated and drained
Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if warm enough
Farmland of statewide importance, if thawed
Farmland of local importance
Farmland of local importance, if irrigated
Farmland of unique importance
Not rated or not available
Soil Rating Points
Not prime farmland
All areas are prime farmland
Prime farmland if drained
Prime farmland if protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated
Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
Prime farmland if irrigated and drained
Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
Prime farmland if subsoiled, completely removing the root inhibiting soil layer
Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
Prime farmland if irrigated and reclaimed of excess salts and sodium
Farmland of statewide importance
Farmland of statewide importance, if drained
Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
Farmland of statewide importance, if irrigated

- Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if irrigated and drained
- Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
- Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
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- Farmland of statewide importance, if warm enough
- Farmland of statewide importance, if thawed
- Farmland of local importance
- Farmland of local importance, if irrigated
- Farmland of unique importance
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: James City and York Counties and the City of Williamsburg, Virginia
Survey Area Data: Version 22, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 21, 2022—Jul 13, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
11C	Craven-Uchee complex, 6 to 10 percent slopes	Farmland of statewide importance	32.8	32.9%
15E	Emporia complex, 15 to 25 percent slopes	Not prime farmland	32.9	33.0%
17	Johnston complex	Not prime farmland	2.5	2.6%
19B	Kempsville-Emporia fine sandy loams, 2 to 6 percent slopes	All areas are prime farmland	21.6	21.7%
29A	Slagle fine sandy loam, 0 to 2 percent slopes	All areas are prime farmland	4.4	4.4%
29B	Slagle fine sandy loam, 2 to 6 percent slopes	All areas are prime farmland	2.6	2.6%
34B	Uchee loamy fine sand, 2 to 6 percent slopes	Not prime farmland	2.8	2.8%
Totals for Area of Interest			**99.7**	**100.0%**

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

R E S O L U T I O N

VIRGINIA CODE SECTION 15.2-2232 ACTION ON

CASE NO. SUP-24-0016. 101 AND 121 IVY HILL ROAD SOLAR PROJECT

WHEREAS, in accordance with Section 15.2-2232 of the Code of Virginia, a public utility facility, whether publicly or privately owned, shall not be constructed, established, or authorized, unless and until the general location or approximate location, character, and extent thereof has been submitted to and approved by the Planning Commission as being substantially in accord with the Comprehensive Plan or part thereof; and

WHEREAS, Ivy Hill LLC and Barbara Silverman, in care of Ellen Lightman (the "Owners"), own property located at 101 and 121 Ivy Hill Road, further identified as James City County Real Estate Tax Map Parcel Nos. 1110100013 and 1110100024, respectively, and zoned A-1, General Agricultural (the "Property"); and

WHEREAS, Ms. Ester Rekhelman of Hexagon Energy, on behalf of the Owners, has applied for a Special Use Permit (SUP) to allow for the construction of a 3-megawatt (MW) solar electrical generation facility on the Property as shown on a plan titled "Hedera Solar" dated November 12, 2024; and

WHEREAS, in accordance with Section 15.2-2204 of the Code of Virginia and Section 24-9 of the James City County Zoning Ordinance, a public hearing was advertised, adjacent property owners notified, and a hearing scheduled for Case No. SUP-24-0016.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of James City County, Virginia, for the reasons expressed in the written minutes which shall be transmitted to the Board of Supervisors, finds that the general or approximate location, character, and extent of the public utility facility shown in Case No. SUP-24-0016 is substantially in accord with the Comprehensive Plan and applicable parts thereof.

_____
Tim O'Connor
Chair, Planning Commission

ATTEST:

_____
Susan Istenes, Secretary

Adopted by the Planning Commission of James City County, Virginia, this 8th day of January, 2025.

SUP24-16IvyHSolar-res

RESOLUTION

SOLAR FACILITIES POLICY

WHEREAS, James City County has recently considered a number of Special Use Permit ("SUP") applications for solar facilities; and

WHEREAS, these applications generated concerns that such facilities may adversely affect the County; and

WHEREAS, the James City County Natural & Cultural Assets Plan identifies specific goals, objectives, and recommendations concerning the evaluation and development of solar facilities within the County; and

WHEREAS, the James City County Board of Supervisors (the "Board") adopted a resolution on April 11, 2023, directing staff to assess solar facilities, and identify best practices with regard to policies and regulations; and

WHEREAS, the Board further directed the development of a comprehensive Board policy for solar facilities based on this assessment; and

WHEREAS, on July 25, 2023, September 12, 2023, and October 4, 2023, the Board was presented with an assessment, research, and best practices concerning solar facilities.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors hereby establishes the following Solar Facilities Policy (the "Policy").

1. *Solar Facility Definitions*.

   a. Solar energy generating facility (solar facility). Solar energy generating facilities may include, but are not limited to, solar energy generating devices, inverters, a substation, ancillary equipment, buildings, security fencing, access roads, stormwater control measures, and screening on the site. Solar energy generating devices utilize sunlight as an energy source to heat or cool buildings, heat or cool water, or produce mechanical power by means of any combination of collecting, transferring, or converting solar generated energy. The term applies to, but is not limited to, solar photovoltaic systems, solar thermal systems, and solar hot water systems.

   b. Community solar facilities provide electricity and/or utility bill reductions through net metering to multiple owners or subscribers and generate 5 megawatts ("MW") alternating current or less. In James City County, community solar facilities should be less than 1 MW.

   c. Utility-scale solar facilities provide electricity for commercial distribution.

      i. Small utility-scale facilities generate less than 1 MW.
      ii. Large utility-scale facilities generate 1 MW or greater.

2. *Location Guidance*.

   a. Community solar facilities should be located on less than 20 acres of total fenced area and may be located inside and outside the Primary Service Area ("PSA").

   b. Small utility-scale solar facilities should be located on less than 20 acres of total fenced area and may be located inside and outside the PSA.

   c. Large utility-scale solar facilities should be located on 20 acres or more of total fenced area. They should be located outside the PSA in the General Agricultural (A-1), Rural Residential (R-8), or Public Lands (PL) zoning districts. Total project area should not exceed 300 acres.

3. Land use applications for solar facilities should be developed consistent with this policy. Conditions may be imposed upon individual SUPs for solar facilities to ensure consistency with this policy and to mitigate any negative impacts associated with a facility. Approval or denial of any SUP will be at the discretion of the Board.

4. Solar facilities should not be located within 400 feet of residences or within 250 feet of historic, cultural, recreational, special flood hazard areas, and environmentally sensitive areas and resources. Solar facilities should incorporate appropriate setbacks, buffers, and screening to address proximity to the above-named areas. For the purpose of this policy, the recommended distances shall be measured from the fenced area of the solar facilities.

5. Solar facilities, including fencing and support equipment, should be fully screened from ground-level view by vegetated buffers at least 50 feet in width from adjacent properties and at least 100 feet in width from public rights-of-way.

6. There should be a minimum distance of one mile between fenced areas of separate solar facilities; however, consideration may be made for a closer distance based upon the size, scale, and design of a facility and the overall suitability of a given site. For the purpose of this policy, the recommended distances shall be measured from the fenced area of the solar facilities.

7. If a solar facility consists of multiple parcels, solar panels included as part of the same facility should be sited on contiguous parcels to limit project fragmentation and viewshed impacts.

8. The number and size of solar facilities in the County should be limited to preserve open space and adequately mitigate stormwater runoff.

9. Solar facilities should be designed to conserve and protect habitat cores, blocks, and corridors connecting habitat areas. Any disturbance of these areas should be adequately mitigated, and disturbance of more than 20 acres of these areas is discouraged.

10. Solar facilities should avoid, to the maximum extent possible, the use of land identified as prime farmland by the United States Department of Agriculture. Any disturbance of these areas should be adequately mitigated, and disturbance of more than 50 acres is discouraged.

11. Solar facilities should avoid the use of forested land.

12. Solar facilities should include corridors to allow for the movement of wildlife across the site, and the latest guidance from state environmental agencies should be considered.

13. The closest point of any solar facility should be located within two miles of an existing transmission line within the County or an adjoining locality. Any generation lead lines or electrical lines to connect noncontiguous portions of a facility and/or leading to a facility's substation or point of interconnection should be located underground. For the purpose of this policy, the recommended distances shall be measured from the fenced area of the solar facilities.

14. Applications for solar facilities should identify existing electric distribution or transmission infrastructure that may need to be upgraded for the facility.

15. Solar facilities are encouraged to allow for the continued residential, agricultural, commercial, industrial, or recreational uses within project sites.

16. Applicants for solar facilities should provide mitigation strategies for noise and traffic impacts which should include general traffic plans and designated hours for construction and delivery of materials.

17. Solar facilities should have principal access from roads meeting Virginia Department of Transportation ("VDOT") standards. While collector or arterial roads are preferred, access from local roads may be considered. Principal access from roads not meeting VDOT standards, local roads through neighborhoods or platted subdivisions, or across railroad tracks are not acceptable, and secondary or construction access from these roads and across railroad tracks is discouraged.

18. Solar facilities should provide for economic returns beyond those which could otherwise be anticipated for a given property.

19. Solar facility applicants should discuss and negotiate a siting agreement with the County.

20. To help address the impacts of any proposed solar facility, the SUP application should include the following:

    a. A construction management plan outlining, at a minimum, the anticipated construction schedule, phasing plan, hours of construction, noise mitigation measures, parking, and traffic control plans.

    b. Plans for addressing erosion and sedimentation, grading, and stormwater management. Solar panels are to be considered unconnected impervious areas when performing post-development water quality and quantity calculations.

    c. A landscape plan outlining existing vegetation and the limits of proposed clearing, buffers, screening, and plant materials and species. It should also include a report describing and addressing the viewshed impacts of the facility.

    d. A report inventorying wetlands, Resource Protection Areas, streams, floodplains, forested areas, and agricultural soils on the proposed facility site.

Ruth M. Larson
Chair, Board of Supervisors

ATTEST:

Teresa J. Saeed
Deputy Clerk to the Board

	VOTES			
	AYE	NAY	ABSTAIN	ABSENT
NULL	✓			
HIPPLE	✓			
MCGLENNON	✓			
ICENHOUR	✓			
LARSON	✓			

Adopted by the Board of Supervisors of James City County, Virginia, this 10th day of December, 2024.

SolEngGFacPolcyrev-res