



U.S. Virgin Islands DPNR

Major Coastal Zone Management Permit Application— Tier 1

For a Proposed Solar Energy Facility
with Battery Storage

Parcel No. 17 Remainder Bovoni
Estate Bovoni, St. Thomas, U.S. Virgin Islands

HTA Project No. 23.141001.00

October 2025

Applicant:
STB Solar, LLC
A Vlelectron, LLC Company



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L&WD Forms



**GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES
DEPARTMENT OF PLANNING AND NATURAL RESOURCES
DEVELOPMENT PERMIT APPLICATION**

**FORM L&WD-2
PERMIT APPLICATION**

Date Received: _____

Date Declared Complete: _____

Permit No. _____

Application is hereby made for a Earth Change/Coastal Zone Permit

1. Name, mailing address and telephone number of applicant.

_____ STB SOLAR, LLC
c/o Christian Loranger PMB 348
5000 Est. Enighed, Ste 4a PMB 146 St. John, U.S.V.I. 830
1-508-965-8637 00830

2. Name, title, mailing address and telephone number of owner of property and of developer.

<u>Owner</u>	<u>Developer</u>
Bovoni Property 17, LLC	STB Solar, LLC
PO Box 267 St. Thomas, VI 00804	5000 Est. Enighed, Ste 4a PMB 1.
N/A	1-508-965-8637

3. Location of activity. Plot No. 109402010100

Estate Bovoni Island Saint Thomas

4. Zoning District Commercial Zone (C)

5. Name, mailing address and telephone number of project designer.

Hoyle Tanner & Associates, Inc. - 603-431-2520
183 International Drive, Suite 200, Portsmouth, NH 03801

6. Name, mailing address and telephone number of principal earthwork contractor.

Mongoose Solar, LLC 5000 Estate Enighed, PMB 348 St John, VI 00830
(508) 965-8637

7. Summary of proposed activity. Include all incidental improvements such as utilities, roads, etc. (Use additional sheets if necessary).

The proposed solar energy facility activities will involve: land clearing; additional and medium voltage electrical contractor with various components consisting of

- 7a. State type of Land Uses as specified in the VI Zoning Law, which are applied for e.g., restaurant, hotel, single dwelling, etc.

Estate Bovoni is within Commercial Zone C which permits the use of altern;
and components set forth in Section 228 of the VI Zoning Law.

**FORM L&WD-2/PERMIT APPLICATION
CONT'D**

8. Date activity is proposed to start 11/1/2025, be completed 4/1/2026

9. Classification of minor or major permit. Check one:

☐ Minor Permit Application

☒ Major Permit Application

State below which criterion applies in making above check.

Public Hearing, Environmental Assessment Report and a Pre-Application N

10. Application is hereby made for a permit to authorize the activities described herein. I agree to provide any additional information/data that may be necessary to provide reasonable assurance or evidence to show that the proposed project will comply with the applicable territorial water quality standard or other environmental protection standards both during construction and after the project is completed. I also agree to provide entry to the project site for inspectors from the environmental protection agencies for the purpose of making inspections regarding this application, and that to the best of my knowledge and belief the information provided herein, is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities.

Signature of Applicant or Agent



Date

10/15/2025

Signature of Owner (Where Applicant
or Agent is not Owner)

FOR DEPARTMENT USE ONLY
Inspector Record

Date Inspected: _____

() Permit Approved

() Permit Disapproved

Inspector's Remarks: _____

Inspector

Date

Commissioner, Planning & Natural Resources

Date

**GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES
DEPARTMENT OF PLANNING AND NATURAL RESOURCES
DEVELOPMENT PERMIT APPLICATION**

**FORM L&WD-3
ZONING REQUIREMENTS TABLE**

The following table shall be completed by the applicant with entries as appropriate for the zoning district in which the activity is taking place. Not all the requirements will necessarily apply to a particular zone. Consult the Zoning Law. For your guidance also consult the zoning Requirement Matrix attached to the application forms, i.e., for a R-2 zone only items 1 through 11 will apply.

Applicants Name: STB Solar, LLC
Christian Loranger Signature:  Date: 10/15/2025
Location of Activity-Plot No. 109402010100 Estate Bovoni Island Staint Thomas

Zoning District: Commercial Zone (C)

1. Proposed use (residential etc.) Alternative and Renewable Energy Systems - Electrical substations
2. Accessory use if any N/A
3. Number of on site parking spaces Existing N/A proposed N/A
4. Area of lot, (sq. ft. or acreage) 30.95 Ac. (1,348,229 Sq. Ft.)
5. Area covered by proposed and existing buildings, (sq. ft.)
N/A - no existing or proposed buildings
6. Setback of building from street property line, (ft.)
N/A - no proposed building
7. Side yard setback ft) N/A
8. Rear yard setback (ft) N/A
9. Height of building (ft. or stories depending on zone) N/A - no proposed building (panels set 24" above ground)
10. Proposed: Solar Energy Facility with Battery Storage
11. Lot width at street line (ft.) N/A - no residential lots proposed
12. Area of usable open space (sq. ft. and (%) of lot _____
13. Persons per acre ratio N/A
14. Floor area ratio N/A
15. Number of onsite parking and loading spaces N/A
16. Building setback (yards 11, W-2 only) N/A

FOR DEPARTMENT USE ONLY

Inspector: _____ Date: _____ Permit No. _____

**GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES
DEPARTMENT OF PLANNING AND NATURAL RESOURCES
DEVELOPMENT PERMIT APPLICATION**

**FORM L&WD-4
MAJOR PROJECT SUMMARY DATA**

Section I. Applicant

1. Name, address and telephone number of applicant.

STB SOLAR, LLC Subsidiary of Vlelectron, LLC (Applicant and Developer)
5000 Est. Enighed, Ste 4a PMB 346, St. John, U.S.V.I. 00830
1-508-965-8637

2. Name, address and telephone number of owner of Property and of developer.

Bovoni Property 17, LLC

PO Box 267 St. Thomas, VI 00804

N/A

Section II. Summary of Proposed Development

3. Describe the proposed development

The proposed development is a solar energy facility with battery storage anticipated to generate clean energy

to the Water and Power Authority (WAPA) grid while intended to work within the existing grades and outside the flood zone

to minimize the impacts on the surrounding land. Appropriate screening, stormwater and erosion control measures

will be implemented to limit visibility from surrounding properties and ensure all impervious cover is addressed, if applicable.

Section III. Description of Proposed Development

4. Name of development Bovoni Solar Energy Facility with Battery Storage

5. Plot No. 109402010100

6. Zoning District: Commercial Zone (C)

7. PWD Map No. A9-553-T000

8. Proposed use (residential, etc. as listed in Zoning Law):

Estate Bovoni is within Commercial Zone C which permits the use of alternative and renewable energy

systems and components set forth in Section 228 of the VI Zoning Law.

9. Accessory use if any N/A

FORM L&WD-4
MAJOR PROJECT SUMMARY DATA Cont'd

10. Area of Lot(s) (acreage) 30.95 Ac. (1,348,229 Sq. Ft.)
11. Area covered by existing buildings (sq. ft.) N/A - no existing buildings
12. Area covered by proposed buildings (sq. t.) N/A - no proposed building(s)
13. Floor area total N/A
14. Floor area ratio (B-1, B-2 zones only) N/A
15. Number of buildings N/A
16. Number of units total N/A
- | | Person | Persons |
|-------------------------------------|------------|--------------------------|
| 17. Schedule of units: Efficiencies | _____ | x 1.5 Unit _____ = _____ |
| 1 bedroom | _____ | x 2 _____ = _____ |
| 2 bedroom | _____ | x 3 _____ = _____ |
| 3 bedroom | _____ | x 4 _____ = _____ |
| Other | _____ | x _____ = _____ |
| Total Persons | <u>N/A</u> | _____ |
18. Number of on site parking and loading spaces N/A
19. Maximum building height (stories/ft) N/A - no proposed building (panels set 24" above ground)
20. Adjoining property land use(s) The majority of adjoining properties of Bovoni 17 Remainder, Bovoni Estate have a land use designation of Industrial (District 6), while the very northeast side has a land use designation of Conservation (District 1).
21. Setback of building from street property line (ft) N/A
22. Sideyard setback (ft) N/A
23. Rear yard setback (ft) N/A
24. Density (person/acre) N/A
25. Area of usable open space (sq. ft. % of lot) _____

FORM L&WD-4
MAJOR PROJECT SUMMARY DATA Cont'd

Section IV. Comments

26. Proposed Potable Water Supply (method & quality estimate gal/day)
N/A

27. Proposed Sewage Treatment (method & quality estimate gal/day)
N/A

28. Proposed Solid Waste Disposal (method & quality estimate lbs/day)
N/A

29. Proposed Electrical Supply (method & demand estimate KWH for single & 3 phase)
The proposed solar facility anticipates generating 10.725MWdc which is then inverted to 10MWac (10MWac to WAPA Grid and remaining stored in on-site batteries). 3-phase supply with an estimated 18 KWH.

30. Air Conditioning (method & demand estimate (KWH)
N/A

31. Other Utilities A connection to the existing WAPA grid will be required to allow the stored energy from the solar facility to fed the grid at a maximum allowed rate per any grid interconnection study performed for the area. The site shall not exceed 10 MWac output/export into the WAPA grid.

32. Other N/A

Section V.

33. Will the development extend onto or adjoin any beach tidelands, submerged lands or public trustlands?
No.

34. Will the development maintain, enhance or conflict with public access to the shoreline and along the coast?

There is no known existing public access to the shoreline or along the coast; however, should any access become known prior to construction the development anticipates to

maintain any such access.

35. Will the development protect or provide moderate income housing opportunities?

Will it displace moderate income housing?

No residential development is being proposed therefore would protect all existing income housing opportunities.

36. How will the development affect traffic on the coastal access roads?

The proposed project should have no adverse affect to traffic on the coastal access roads. No parking is proposed and any trips generated will be from infrequent maintenance

vehicles that will park along side the proposed gravel roads.

Signature of owner or authorized agent

Date

GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES DEPARTMENT OF
PLANNING AND NATURAL RESOURCES DEVELOPMENT PERMIT APPLICATION

FORM L&WD-5
PROOF OF LEGAL INTEREST

AFFIDAVIT

I, Christian Loranger of STB Solar, LLC (Subsidiary of Vlelectron, LLC) being duly sworn depose and say that:
Applicant(s)* (or John Doe of Entity Applicant)

1. Christian Loranger am/is the (check one)
(I or Entity/Applicant)

☐ Record title owner (fee simple) ☐ Lessee ☐ Other (specify)

Of the real property described as Parcel No(s) 109402010100

Estate Bovoni Quarter No. 1&2 Frenchman's Bay Island Saint Thomas

***Applicant(s) is required to provide documentation for legal interest stated above (e.g. deed, lease, etc.)**

2. I have the irrevocable approvals, permission, or power of attorney from all other persons with a legal interest in the property to undertake the work proposed in the permit application as more fully set forth in the exhibit (s) attached hereto:

Signature Date

Signature Date

Print

Print

The foregoing instrument was acknowledged before me this ____ day of _____

20 ____ by _____ at _____ county
(Name or Name/Title of Entity)

of _____.

Notary Public

My Commission expires

**GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES
DEPARTMENT OF PLANNING AND NATURAL RESOURCES
DEVELOPMENT PERMIT APPLICATION**

**PUBLIC NOTICE
(SUPPLEMENT TO FORM L&WD-6)**

Pursuant to Act 5270, as approved by the Governor of the Virgin Islands on July 30, 1987, amending Section 910 (a) (2) and 911 (d) (2) of the Coastal Zone Management Act (Title 12, VI Code, Chapter 21), all applicants for Coastal Zone Management permits are required to present "certification from Bureau of Internal Revenue and Department of Finance" indicating "that the applicant has filed and paid all taxes, penalties and interest, and from the Office of the Lieutenant Governor that the applicants has filled its required annual report or has satisfactorily made agreement to pay the taxes or fill the required reports "12 VIC 910 (a) (2) (C), and " (2) A coastal zone permit that includes an occupancy or development lease shall only be granted for a particular parcel of filled land for a lease period of not more than 20 years; provided that nothing in this subsection shall prohibit a lessee or permittee from executing a new lease at the end of the 20 year period. Any lease executed at the end of the lease period shall meet the requirements of this Chapter and shall be approved by the Governor and ratified by the Legislature, or in the event the Legislature is not in session, by the Committee on Planning and Environmental Protection.

For applicants not required by law to submit an annual report or to satisfactorily make an agreement to pay taxes or file the required reports, a letter from the Bureau of Internal Revenue, and/or the Department of Finance, and/or the Lieutenant Governor's office so indicating will be required to continue further processing of the application.

Accordingly, all Coastal Zone Management permit applications (both minor and major), which are not accompanied by the certificates, as required by Act 5290, or written notification from said agencies indicating waiver or exemption of these requirements will not be accepted by the permitting office, It is the responsibility of each applicant to demonstrate compliance with the provisions of this Act.

**GOVERNMENT OF
THE VIRGIN ISLANDS OF THE UNITED STATES
-0-
VIRGIN ISLANDS BUREAU OF INTERNAL REVENUE**

**(DPNR FORM L&WD-6)
APPLICATION FOR TAX FILING AND PAYMENT STATUS REPORT****

Date: 10/15/2025

The applicant identified below hereby requests a letter certifying his or her tax filing and payment status for the purpose of receiving a Coastal Zone Management Permit from the Virgin Islands Department of Planning and Natural Resources pursuant to Act 5270, amending Sections 910 (a)(2) and 911 (d)(2) of the Coastal Zone Management Act (Title 12, Chapter 21, Virgin Islands Code). The applicant authorizes the Bureau of Internal Revenue to disclose any taxpayer information necessary to process this application to the Virgin Islands Department of Planning and Natural Resources, who may make such further disclosures as are necessary to carry out the requirements of the Coastal Zone Management Act, as amended.

Name: Christian Loranger As manager STB SOLAR, LLC

Business Name: Quantum Solar, LLC (Subsidiary of Vlelectron, LLC) STB SOLAR, LLC

EIN/TIN: 66-1110485

SSN: _____

Please Indicate:

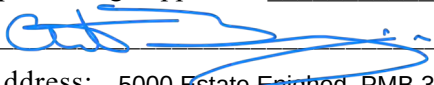
☐ *Corporation
☐ *Partnership
☒ Individual
☐ Other

Type of Business: Solar Development

Please circle forms that you use: 1120, 1120s,
1065, 1040, 941 VI, 722 VI, 720, 720 VI, 720
BVI, 50VI, other (list)

Date Business Started: 10/15/2025

Person Representing Applicant: Christian Loranger Position: Manager

Signature: 

Mailing Address: 5000 Estate Enighed, PMB 348, St John, VI 00830

Date: 10/15/2025 Telephone Number: (508) 965-8637

Reply to: #1A Lockharts Garden, St. Thomas VI 00802 or 4008 Estate Diamond, St. Croix VI 00820

* Partnerships and/or Corporations must list partners/ corporate officers, social security numbers and addresses on a separate sheet and attach it to this application.

GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES
DEPARTMENT OF PLANNING AND NATURAL RESOURCES
DEVELOPMENT PERMIT APPLICATION

FORM L&WD-7

CORPORATION/ASSOCIATION APPLICATION

(To be used when a corporation or association is making a Permit Application in Tier I)

STB SOLAR, LLC

(Corporation or Association Name)

By: [Signature] as Manager
(Signature)
President or Vice-President or equivalent

Owner / Developer / Operator

Title/Position (Print)

Christian Loranger

Print

WITNESS: [Signature]
DAVID J. FASS

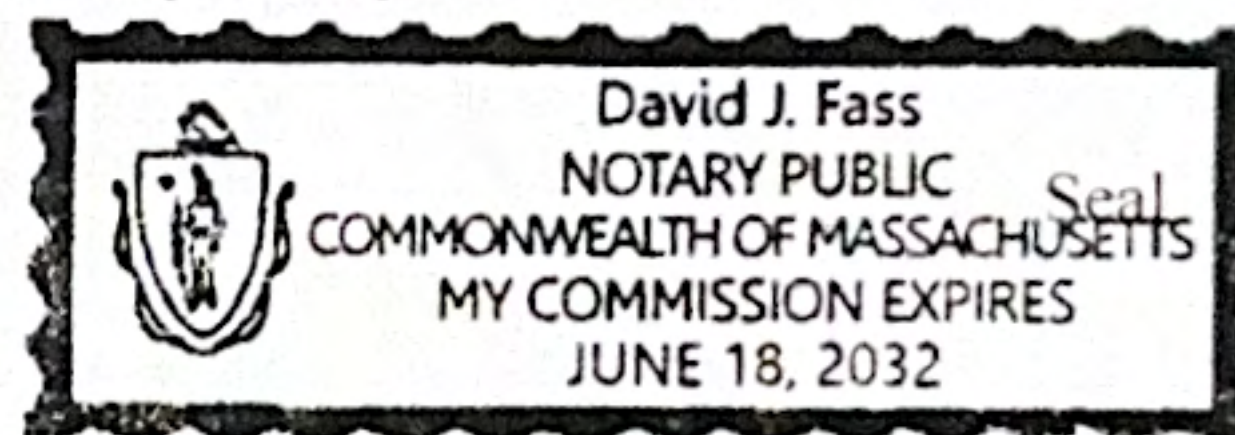
ATTEST:

Secretary (or equivalent)

Signature

Secretary (or equivalent)

Print



On this 15TH day of OCTOBER, 2025, before me the undersigned officer, personally appeared _____

CHRISTIAN LORANGER, who acknowledges himself to be the OWNER

of STB SOLAR, LLC; that he executed the foregoing instrument in the capacity above and has the

authority to execute this application on behalf of the company.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal the day and year above written.

[Signature]
DAVID J. FASS

Include Supporting Documents:

1. Compliance with Act No. 5270 by providing:
 - (a) Tax clearance letter from the Bureau of Internal Revenue
 - (b) Property tax clearance letter from the Lieutenant Governor's Office.
 - (c) Corporations and Associations: Certificate of Good Standing or equivalent, organizational documents & Amendments (Articles, Bylaws, Operating Agreement, Declarations)
 - (d) Corporate Resolution (or equivalent) authorizing action on behalf of the company.

GOVERNMENT OF THE VIRGIN ISLANDS OF THE UNITED STATES DEPARTMENT OF
PLANNING AND NATURAL RESOURCES DEVELOPMENT PERMIT APPLICATION

FORM L&WD-5
PROOF OF LEGAL INTEREST

AFFIDAVIT

I, Christian Loranger of STB SOLAR LLC. being duly sworn depose and say that:
Applicant(s)* (or John Doe of Entity Applicant)

1. STB SOLAR, LLC am/is the (check one)
(I or Entity/Applicant)

☐ Record title owner (fee simple)

☒ Lessee

☐ Other (specify)

Of the real property described as Parcel No(s) 109402010100

Estate Bovoni Quarter No. 1&2 Frenchman's Bay Island Saint Thomas

*Applicant(s) is required to provide documentation for legal interest stated above (e.g. deed, lease, etc.)

2. I have the irrevocable approvals, permission, or power of attorney from all other persons with a legal interest in the property to undertake the work proposed in the permit application as more fully set forth in the exhibit (s) attached hereto:

[Signature] as Mayor 10/15/2025
Signature Date

Signature Date

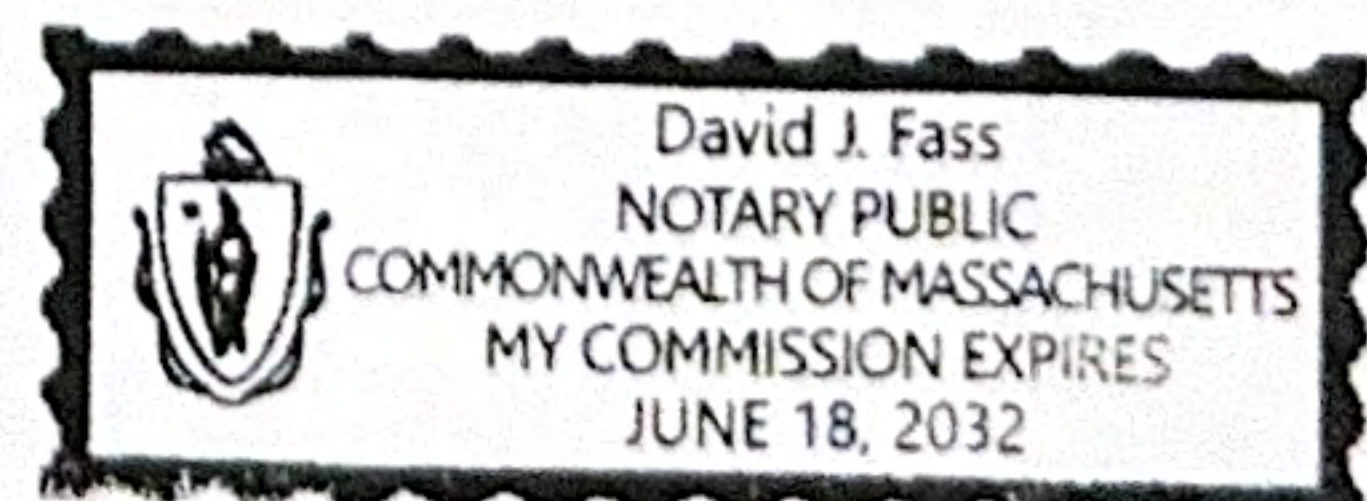
Christian Loranger
Print

Print

The foregoing instrument was acknowledged before me this 15TH day of OCTOBER
20 25 by CHRISTIAN LORANGER at PLYMOUTH county
(Name or Name/Title of Entity)

of MASSACHUSETTS
[Signature]
Notary Public DAVID J. FASS

6/8-2032
My Commission expires



Flood Plain Determination and Permit Application

To be completed by all applicants

1. Owner: Bovoni Property 17, LLC
 Mailing Address PO Box 267 St. Thomas, VI 00804
 Home Tel. #: N/A Business Tel. #: N/A Cellular #: N/A
2. Designer: Hoyle Tanner & Associates, Inc.
 Lic. #: _____ Tel. #: _____ Cellular #: _____
3. Plot #: 109402010100 Estate: Bovoni Quarter: No. 1&2 Frenchman's Bay
 Flood Zone Designation: "X" and "VE"

If your flood zone designation is Zone A, AE, AO, A1-30, A99, V, VO, Vc or V1-V30 as shown on the NFIP FIRM Map, then complete this section.

***** NFIP Flood Zone Designation *****

1. Type of development:

1 or 2 Family dwelling ☐ Mobile Home ☐ Non-Structural ☒

3 Family or more, Apartment or Condo Structure ☐ Non-Residential Structure: ☐

Commercial Structure ☐ New Construction ☐ Non-Structural ☐

Addition to Structure () 50% Substantial Improvement of Existing Structure ☐

Description of Activity This project is a proposed Solar Energy Facility with battery storage intended to be designed so that the limits of construction are outside
of the 100-year "VE" flood zone.

2. Base Flood Elevation at the Development Site is 14 ft. above mean sea level (msl).
3. Elevation of the First Floor, Basement or Flood proof level for proposed structure is N/A ft.
4. Describe the Non-Structural Activity i.e. septic tank, waste water treatment plants etc. (including the location and development): The proposed Solar Energy Facility intends to work within the existing grades on-site and will be constructed with rows of racks and panels that
are nearly entirely previous limiting any adverse effects on existing runoff and erosion into the coast.
5. Attach a certified copy of site plan (8.5" x 11") showing Base Flood Elevation . See sample attached.

FOR OFFICE USE ONLY

Is the property located in an identified Flood Hazard Area? () YES () NO

NFIP Zone Designation: _____ Forward to Flood Plain Manager : () YES () NO

Application : APPROVED () DENIED () RESUBMIT ()

Plan Reviewer Name: _____

Signature: _____ Date: _____

SITE PLAN

SCALE: ONE INCH EQUALS 50 FT.

SPHA or 100-Year Flood plain

IN 100 YEAR FLOOD BOUNDARY

Shore
Line

NOTES: ALL BASEMENTS WILL BE CONSTRUCTED
OF CINDER BLOCK AND WILL BE LEFT UNFINISHED.
FOR STRUCTURES LOCATED ON LOTS #1 AND #2,
UTILITIES WILL BE SITUATED ON FIRST FLOORS.

BFE- Base (Or 100 Year) Flood Elevation
(Tied Into Elevation 6.0 NGVD)

BASEMENT FLOOR EL
4 FT. BELOW GROUND LEVEL

Existing
House

LOT #1

PROPOSED
HOUSE

LOT #2

BFE - EL. 6

BASEMENT FLOOR EL
4 FT. BELOW GROUND LEVEL

BASEMENT FLOOR EL
4 FT. BELOW GROUND LEVEL

Undeveloped
Lot

LOT #3

Estate Road

Private Road

N

Approved Permit Letter Request for Partial Clearing



Christian Loranger
CB Loranger Companies
5000 Estate Enighed, Suite 4a, PMB348
St. John, USVI 00830
Web: www.cbloranger.com

October 10, 2023

via email to jp.oriol@dpnr.vi.gov

The Honorable Jean-Pierre L. Oriol, Commissioner
Department of Planning and Natural Resources
4611 Tutu Mall Park
Suite 300, Second Floor
St. Thomas, VI 00802

RE: Rem. 17 Bovoni Solar Energy Facility Permit Letter Request

Dear Commissioner Oriol:

VIElectron, LLC (VIElectron) has signed a Power Purchase Agreement (PPA) with the Virgin Islands Water and Power Authority (VIWAPA) to construct several Solar Energy Facilities in the U.S. Virgin Islands.

One solar energy facility will be located at the south-eastern end of St. Thomas at Rem. 17 Estate Bovoni. This site is located in the Coastal Zone (Tier I). This system is being designed to generate about 13 MWdc of electrical power and will cover a land area of approximately 30 acres. This facility will be designed to provide power directly to the local grid throughout the day, while also charging an on-site battery energy storage systems (BESS). The battery system will provide power to the grid during nighttime hours or cloudy days with lower solar field output.

For this project, the intention is to work within the existing grades and outside the limits of any flood zones that may exist to minimize the impacts on the existing properties while installing the solar panel modules, and any associated infrastructure.

Over the next couple of months, VIElectron will be preparing and submitting A Major Land CZM Permit Application for the Bovoni Solar Project. In this regard, a CZM Pre-Application Meeting organized by the DPNR CZM Division was held on Thursday, October 5, 2023.

As you know, the Major CZM Application Process can take quite a few months to complete. In the interim, VIElectron would like to proceed with some critical, preliminary work on the Bovoni Site to include installing fencing around the perimeter of the property; conducting a Phase I Archeological Study, as well as Topographic and Boundary Surveys. To this end, VIElectron kindly seeks your approval to allow a partial clearing of the Site using transects as

VIELECTRON Bovoni, St. Thomas Solar Farm Permit Request

per the attached plan shown below. The plan depicts clearing a 15' swath around the perimeter of the projects for fencing and 15' wide transects in an east-west direction through the sites for proper site investigations. 40' of vegetation will be left between the transects.

Thank you for your careful consideration of this request. Your approval and support of this matter will be greatly appreciated and will have a significant impact to the timeline of these projects which are critical to the significant improvement to the power reliability on St. Thomas.

If you have any questions or concerns, please contact me at (508) 985 5637.

Sincerely,
VIElectron LLC

Christian B. Loranger
Manager

Environmental Assessment Report (EAR) Narrative

SECTION 1.00 – APPLICANT INFORMATION

Applicant

STB Solar, LLC

c/o Christian Loranger

5000 Est Enighed, STE 4A, PMB 146

Saint John, VI 00830

(508) 965-8637

SECTION 2.00 – LOCATION OF PROJECT

The proposed solar energy facility (“the project”) is located in Tier I (coastal zone), near the eastern section of United States Virgin Island St. Thomas, near the existing landfill, on a parcel identified as No. 17 Remainder Bovoni (Parcel No. 109402010100). The project is expected to be completed in one phase.

SECTION 3.00 – ABSTRACT

The existing site has been extensively disturbed, previously used for agricultural purposes, and is vacant and primarily consists of overgrown woods, grass and mixed growth vegetation where stormwater flows downhill in the southern direction of the site towards the coast. The 100-year flood zone “VE” is present and runs along the coastline; however, the proposed project is entirely within zone “X” and does not anticipate affecting any flooding on-site due to the hydrological outfall is the ocean. Please refer to the Existing Conditions Plan as part of **Attachment G** and FEMA Firm Map as part of **Attachment H**.

Based on a recently performed Biological Study (included as **Attachment D**), although tree boas were not found on the site, conditions of the site fall well within their habitat preference, and the area is within their distribution range. In particular, care should be taken to protect the endangered species of the tree boas and should be closely watched by equipment operators, surveyors and all workers on-site. DPNR should be notified if one is seen so the species can be removed and relocated accordingly.

Based on a recently performed Archeological Study (included as **Attachment E**), there are no known cultural resources that would be impacted by the proposed project.

Due to the location of the site in relation to nearby airports, a Glint & Glare Study was not required for the site; therefore, the solar system runs along the east-west axis.

SECTION 4.00 – STATEMENT OF OBJECTIVES

The proposed project intends to work within the existing grades and outside the limits of the flood zone to minimize the impacts on the surrounding land while installing the solar panel modules, and any associated infrastructure, to connect to the Water and Power Authority (WAPA).

The system itself is designed to provide power directly to the local grid throughout the day, while also charging one (1) on-site battery energy storage system (BESS).

SECTION 5.00 – DESCRIPTION OF PROJECT

5.01 – Summary of Proposed Activities

The proposed activities for the installation of the project includes; an initial survey and staking the limits of all work, constructing the stabilized construction entrance, installing silt fences and other various perimeter erosion control measures prior to any site clearing and grubbing. On December 1, 2023, a Permit Letter Request was approved allowing for partial clearing of the site for 15' wide perimeter around the project area for fence installation and 15' wide transects in the east-west direction for proper site investigation at 40' intervals between each transect. Currently the site has been cleared according to the approved letter (included as part of this application) and appropriate erosion control measures are already in place.

Once additional permits are obtained, the remaining activities for installation will include; the installation of the security fence, construction of the 20' wide gravel access roads, construction of any stormwater rock berms and other best management practices, installation of the solar racking screws, construction of the solar racking system and installation of the solar panels, then the installation of all conduit runs and electrical equipment. The project area should be seeded in any disturbed areas that appear bare after construction.

5.02 – Purpose of Project

The proposed project intends to generate clean energy for WAPA and ultimately to the residences of the Virgin Islands. The battery system will provide power to the grid during nighttime hours or cloudy days with lower solar field output for a more consistent power supply.

5.03 – Presence and Location of Any Critical Area(s)

The site may contain steep slopes and several drop-offs.

There are no ghuts present on-site.

There are no wetlands present on-site.

5.04 – Proposed Method of Construction

The clearing and grubbing for the site has been, and will continue to be, completed with a low ground pressure skid steer or track excavator with a mulching attachment to remove and grind the trees and vegetation within 2-inches of the existing ground surface to preserve all topsoil and allow existing roots to remain. The majority of the mulch is left in place, while any excess mulch is placed in a perimeter berm along the downhill slopes toward the coast.

The proposed racking system is supported on 2.375-inch diameter ground screws that are installed into the ground setting the lower end of the panels approximately 24-inches above ground. The proposed technology utilizes First Solar Series-6 465W solar panel modules set at either a 10- or 20-

degree tilt, depending on the orientation of existing slopes – the site experiences reverse slopes along the north side of the property. Each panel is placed within a galvanized ground mounted racking system, custom made specifically for the USVI to withstand 180 mph wind speeds, installed in rows running in the east-west direction, where each row is spaced to provide a minimum two (2) feet of clearance between adjacent solar panels; depending on the existing slopes of the site some five (5) and eight (8) foot clearances are necessary especially to the north where the site experiences reverse slopes. At the end of each row, all power lines used to operate the solar panels will be distributed above ground to connect to the equipment pads where the low-voltage wires will run through a Class 2 Circuit (CAV) system and the high-voltage wires will run through conduits on concrete pads.

For installation of the solar panels and associated racking system within the steep slopes of the site, cut ins and steps may need to be constructed for access.

No proposed water, sewer, lighting or stormwater infrastructure (i.e. inlets, manholes, etc.) as part of this project.

5.05 – Provisions to Limit Site Disturbance

The on-going clearing and mulching of the site, cutting all trees and vegetation within 2-inches of the existing ground, allows all roots and stumps to remain in place creating no soil disturbance and preserving all topsoil and maintaining ground stabilization.

No potable water, sewer or stormwater infrastructure (i.e. inlets, manholes, infiltration basins) are proposed therefore no excavation is required.

All electrical runs, both low- and high-voltage, will be distributed above ground on concrete pads eliminating the need for excavation therefore minimizing any earth disturbance.

Cut ins and steps along the steep slopes will be constructed only on an as needed basis to install the solar system to reduce the overall ground disturbance of the site.

5.06 – Erosion and Sedimentation Controls

The project proposes erosion and sedimentation controls to ensure the site's disturbance material is contained on-site that includes, but are not limited to, site fencing, mulch-in-place and perimeter berms, temporary and permanent rock berms, and natural spray tack adhesives for necessary stepping access paths, as needed, for installation requirements on steep slopes.

5.07 – Construction Activities and Erosion Control Implementation Methods

The current construction activities of partially clearing the site have implemented erosion control methods including mulch-in-place, mulch berms, and silt fencing. These methods have proven to be very effective construction means and methods on site and will continue to be used throughout the duration of construction for the project.

Construction and installation of the ground screws and racking system within the steep slopes on-site will have additional erosion control methods implemented where cut ins and steps may be required. Silt fencing and natural spray tack adhesives should be used, as needed, for sections of the cuts and/or steps that appear to fail on-site during construction activities. Temporary rock berms may be

necessary in areas that form stormwater flow paths due to construction activities, especially during heavy rains. Permanent rock berms will be installed within the project area at locations that demonstrate forming flow paths to prevent future stormwater erosion. Please refer to the Hydrology Report as part of **Attachment I**.

5.08 – Maintenance of Erosion and Sediment Control Measures

The contractor will be responsible for implementing all erosion and sediment control devices needed to stabilize the project area during construction with both temporary and permanent measures to prevent excess runoff, due to construction, to the on-site ghuts and/or off-site to the coast. All temporary stabilization measures will be removed after the site has been stabilized and/or construction is complete. Erosion control measures are to be inspected weekly and after every heavy rainfalls within 24 hours.

5.09 – Method of Sewage Disposal

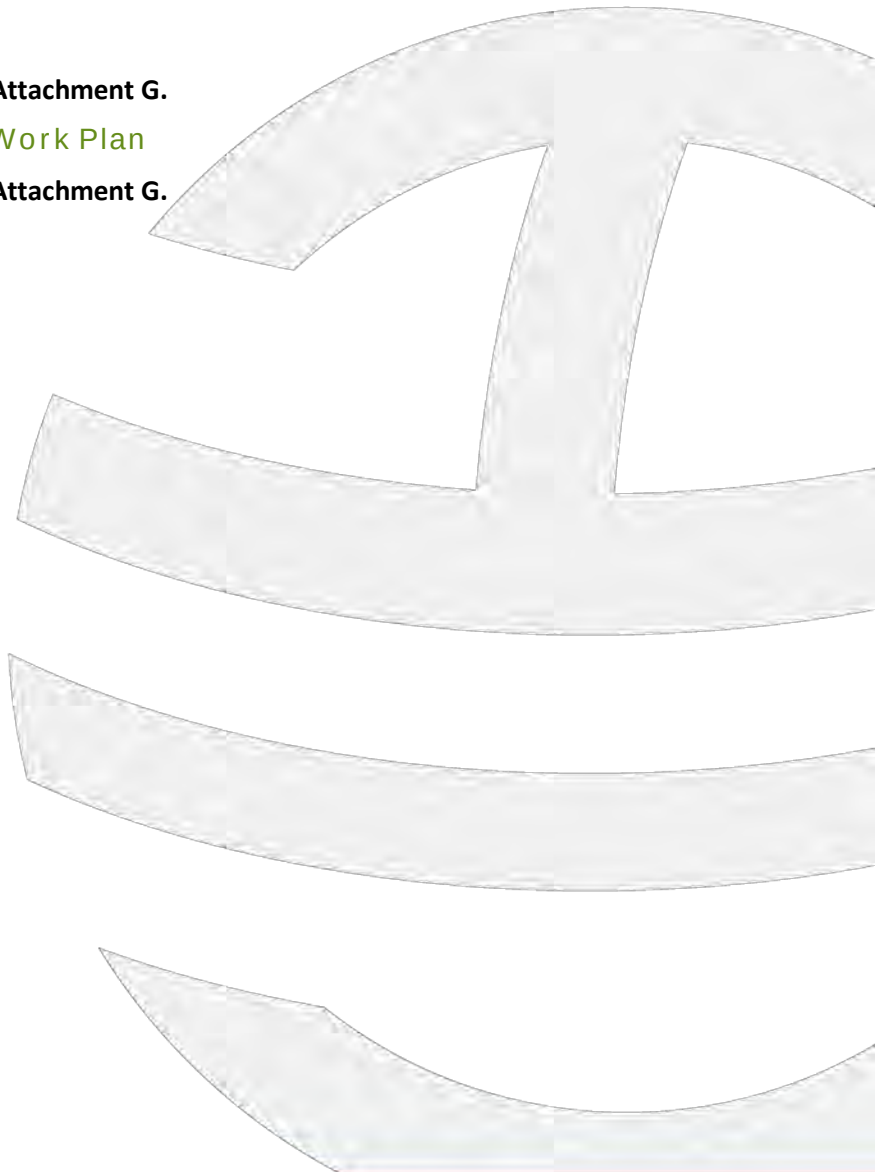
The proposed project does not include any residential or office spaces producing sewage waste and therefore methods of disposal is not applicable.

5.10 – Drawings and Plans

Please refer to Construction Plans as part of **Attachment G**.

5.11 – Proposed New Development Work Plan

Please refer to Construction Plans as part of **Attachment G**.



Attachment A – Lease Agreement / STB Solar, LLC –
Subsidiary of Vlelectron, LLC Documentation



Attachment B – Property Tax Clearance Letter



GOVERNMENT OF THE U.S. VIRGIN ISLANDS
BUREAU OF INTERNAL REVENUE

6115 EST. SMITH BAY-
ST. THOMAS, VI 00802
Tel: (340) 714-9320
Fax: (340) 714-9341

11/22/2022

4008 ESTATE DIAMOND - PLOT 7-B
CHRISTIANSTED, VI 00820
Tel: (340) 773-1040
Fax: (340) 773-1006

GENTLE WINDS CONDOMINIUM ASSOCIATION
9003 GENTLE WINDS
FREDERIKSTED, VI 00841-0000

Business EIN: 660637966
RE:

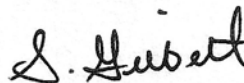
Please Submit This Letter To Your CZM Authority

Dear Taxpayer:

This is in response to your application of 11/22/2022 in which you requested a letter of clearance for a Costal Zone Management Permit pursuant to Title 12, V. I. Code, Section 910 (a) (c).

Based on the information in our files, we find that you are current in the filing and payment of your tax obligation. This Certification is for Costal Zone Permit purposes only and does not absolve you of any subsequent revelation of tax obligation past or future.

Sincerely,



Delinquent Accounts & Returns

Attachment C – NOI and Construction SWPPP



Stormwater Pollution Prevention Plan (SWPPP)

For Construction Activities At:

Proposed Solar Energy Facility with Battery Storage
Parcel No. Bovoni 17 Remainder of Estate Bovoni,
Western Por. No. 1&2 Frenchman's Bay Quarter, St. Thomas, VI 00802

SWPPP Prepared For:

Quantum Solar, LLC
Subsidiary of VIELECTRON, LLC
c/o Christian Loranger
5000 Est. Enighed, Ste 4a PMB 146, St. John, U.S.V.I. 00830
Phone: 508-965-8637
nbd solar@gmail.com

SWPPP Prepared By:

Hoyle, Tanner & Associates, Inc.
95 E. Mitchell Hammock Road, Suite 200
Oviedo, FL 32765
603-431-2520

SWPPP Preparation Date:

10/14/2025

Estimated Project Dates:

11/01/2025 – 07/01/2026

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Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

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SECTION 1: CONTACT INFORMATION/RESPONSIBLE PARTIES

1.1 *Operator(s) / Subcontractor(s)*

Operator(s):

Quantum Solar, LLC
Subsidiary of VIELECTRON, LLC
Christian Loranger
5000 Est. Enighed, Ste 4a PMB 146 St. John, U.S.V.I 00830
Phone 508-965-8637
nbd solar@gmail.com
Area of Control: Entire Site

Emergency 24-Hour Contact:

VIELECTRON
Christian Loranger
Phone 508-965-8637

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

1.2 Stormwater Team

Stormwater Team

Name and/or Position, and Contact	Responsibilities	I Have Completed Training Required by VI CGP Part 6	I Have Read the CGP and Understand the Applicable Requirements
Christian Loranger QUANTUM SOLAR, LLC Owner 508-965-8637 nbd solar@gmail.com	Developer	☐ Yes ☐ No	☐ Yes Date:
Christian Loranger VIELECTRON, LLC Operator 508-965-8637 nbd solar@gmail.com	Operator; Inspections of stormwater controls	☐ Yes ☐ No	☐ Yes Date:
Hoyle Tanner & Associates Engineer 603-431-2520	SWPPP Development	☐ Yes ☐ No	☐ Yes Date:

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Stormwater Team Members Who Conduct Inspections Pursuant to CGP Part 4

Name and/or Position and Contact	Training(s) Received	Date Training(s) Completed	If Training is a Non-EPA Training, confirm that it Satisfies the Minimum Elements of VI CGP Part 6
Christian Loranger Quantum Solar, LLC Subsidiary of VIELECTRON Operator 508-965-8637 nbd solar@gmail.com	Insert Title of Training Received	Date: Click here to enter a date.	☐ Principles and practices of erosion and sediment control and pollution prevention practices at construction sites ☐ Proper installation and maintenance of erosion and sediment controls and pollution prevention practices used at construction sites ☐ Performance of inspections, including the proper completion of required reports and documentation, consistent with the requirements of Part 4

See Appendix I for required Training Documentation.

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

SECTION 2: SITE EVALUATION, ASSESSMENT, AND PLANNING

2.1 *Project/Site Information*

Project Name and Address

Proposed Solar Energy Facility with Battery Storage - Bovoni
Parcel No. Bovoni 17 Remainder of Estate Bovoni,
Western Por. No. 1 & 2 Frenchman's Bay Quarter, St. Thomas, VI 00802

Project Latitude/Longitude

Latitude: 18.3089° N
(decimal degrees)

Longitude: - 64.8828 ° W
(decimal degrees)

Latitude/longitude data source: ☐ Map ☐ GPS ☒ Other (please specify): Google Earth

Horizontal Reference Datum: ☐ NAD 27 ☐ NAD 83 ☒ WGS 84

Additional Site Information

Is your site located on Indian country lands, or on a property of religious or cultural significance to an Indian Tribe? ☐ Yes ☒ No

2.2 *Discharge Information*

Does your project/site discharge stormwater into a Municipal Separate Storm Sewer System (MS4)? ☐ Yes ☒ No

Are there any waters of the U.S. within 50 feet of your project's earth disturbances? ☐ Yes ☒ No

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

For each point of discharge, provide a point of discharge ID (a unique 3-digit ID, e.g., 001, 002), the name of the first receiving water that receives stormwater directly from the point of discharge and/or from the MS4 that the point of discharge discharges to, and the following receiving water information, if applicable:

Point of Discharge ID	Name of receiving water that receives stormwater discharge:	Is the receiving water impaired (on the CWA 303(d) list)?	If yes, list the pollutants that are causing the impairment:	Has a TMDL been completed for this receiving waterbody?	If yes, list TMDL Name and ID:	Pollutant(s) for which there is a TMDL:	Is this receiving water designated as a Tier 2, Tier 2.5, or Tier 3 water?	If yes, specify which Tier (2, 2.5, or 3)?
001	Unidentified Water – 800042165	☐ Yes ☒ No		☐ Yes ☒ No			☐ Yes ☒ No	
002	Unidentified Water – 800042287	☐ Yes ☒ No		☐ Yes ☒ No			☐ Yes ☒ No	

2.3 Nature of the Construction Activities

General Description of Project

Installation of a solar farm at Bovoni 17 Remainder, Western Por. No. 1&2 Frenchman's Bay Quarter, St. Thomas, U.S. Virgin Islands. The parcel is roughly 30.9 acres and undeveloped. Approximately 27.9 acres will be used for the installation of a solar farm designed to generate about 10 MW of power. The site is currently being cleared where mulched vegetation is being mulched-in-place. The project consists of the installation of ground screws for the solar racking units where panels will be held. Installation of electrical equipment and conduits will be installed in concrete pads above ground, and access to the site will be through a gravel access drive. No grading is proposed on-site.

Business days and hours for the project: 6am-7pm Daily

Size of Construction Site

Size of Property	30.93 +/- Acres
Total Area Expected to be Disturbed by Construction Activities	27.94 +/- Acres
Maximum Area Expected to be Disturbed at Any One Time, Including On-site and Off-site Construction Support Areas	27.94 +/- Acres

Type of Construction Site (*check all that apply*):

☐ Single-Family Residential
 ☐ Multi-Family Residential
 ☐ Commercial
 ☐ Industrial
☐ Institutional
☐ Highway or Road
☐ Utility
☒ Other Solar Energy Facility

Will you be discharging dewatering water from your site? ☐ Yes ☒ No

If yes, will you be discharging dewatering water from a current or former Federal or State remediation site? ☐ Yes ☒ No

Pollutant-Generating Activities

List and describe all pollutant-generating activities and indicate for each activity the associated pollutants or pollutant constituents that could be discharged in stormwater from your construction site. Take into account where potential spills and leaks could occur that contribute pollutants to stormwater discharges, and any known hazardous or toxic substances, such as PCBs and asbestos, that will be disturbed during construction.

Pollutant-Generating Activity (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations)	Pollutants or Pollutant Constituents (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels)
Demolition/Clearing	Sediment, debris

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Pollutant-Generating Activity (e.g., paving operations; concrete, paint, and stucco washout and waste disposal; solid waste storage and disposal; and dewatering operations)	Pollutants or Pollutant Constituents (e.g., sediment, fertilizers, pesticides, paints, caulks, sealants, fluorescent light ballasts, contaminated substrates, solvents, fuels)
Use of heavy equipment	Oil and grease
Landscaping activities	Fertilizers, Nutrients
Natural spray tack adhesive (Erosion Control)	Sealants, Solvents

2.4 Sequence and Estimated Dates of Construction Activities

Phase I

Phase 1	
Estimated Start Date of Construction Activities for this Phase	11/1/2025
Estimated End Date of Construction Activities for this Phase	7/1/2026
Estimated Date(s) of Application of Stabilization Measures for Areas of the Site Required to be Stabilized	12/1/2025
Estimated Date(s) when Stormwater Controls will be Removed	7/1/2026

2.5 Authorized Non-Stormwater Discharges

List of Authorized Non-Stormwater Discharges Present at the Site

Authorized Non-Stormwater Discharge	Will or May Occur at Your Site?
Discharges from emergency fire-fighting activities	☐ Yes ☒ No
Fire hydrant flushings	☐ Yes ☒ No
Landscape irrigation	☐ Yes ☒ No
Water used to wash vehicles and equipment	☐ Yes ☒ No
Water used to control dust	☒ Yes ☐ No
Potable water including uncontaminated water line flushings	☐ Yes ☒ No
External building washdown (soaps/solvents are not used and external surfaces do not contain hazardous substances)	☐ Yes ☒ No
Pavement wash waters	☐ Yes ☒ No
Uncontaminated air conditioning or compressor condensate	☐ Yes ☒ No
Uncontaminated, non-turbid discharges of ground water or spring water	☐ Yes ☒ No
Foundation or footing drains	☐ Yes ☒ No
Uncontaminated construction dewatering water	☐ Yes ☒ No

2.6 Site Maps

See Appendix A of this SWPPP for Site Map

SECTION 3: DOCUMENTATION OF COMPLIANCE WITH OTHER FEDERAL REQUIREMENTS

3.1 Endangered Species Protection

Eligibility Criterion

Following the process outlined in Appendix C of the VI CGP, under which criterion are you eligible for coverage under this permit?

-
- ☐ Criterion A: No ESA-listed species and/or designated critical habitat present in action area. Using the process outlined in Appendix C of the VI CGP, you certify that ESA-listed species and designated critical habitat(s) under the jurisdiction of the USFWS or NMFS are not likely to occur in your site's "action area" as defined in Appendix A of the VI CGP. *Please Note: NMFS' jurisdiction includes ESA-listed marine and estuarine species that spawn in inland rivers.*
- ☐ Check to confirm you have provided documentation in your SWPPP as required by VI CGP Appendix C (Note: reliance on State resources is not acceptable; see VI CGP Appendix C).

Documentation: Insert Text Here

- ☐ Criterion B: Eligibility requirements met by another operator under the 2012 VI CGP. The construction site's discharges and discharge-related activities were already addressed in another operator's valid certification of eligibility for your "action area" under eligibility Criterion A, C, D, E, or F of the 2012 VI CGP and you have confirmed that no additional ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS not considered in the that certification may be present or located in the "action area." To certify your eligibility under this criterion, there must be no lapse of TPDES permit coverage in the other VI CGP operator's certification. By certifying eligibility under this criterion, you agree to comply with any conditions upon which the other VI CGP operator's certification was based. You must include in your NOI the TPDES ID from the other 2012 VI CGP operator's notification of authorization under this permit and list any measures that you must comply with. If your certification is based on another 2012 VI CGP operator's certification under criterion C, you must provide EPA with the relevant supporting information required of existing dischargers in Criterion C.
- ☐ Check to confirm you have provided documentation in your SWPPP as required by VI CGP Appendix C.

Documentation: Insert Text Here

Eligibility Criterion

Following the process outlined in Appendix C of the VI CGP, under which criterion are you eligible for coverage under this permit?

- ☒ Criterion C: Discharges not likely to result in any short- or long-term adverse effects to ESA-listed species and/or designated critical habitat. ESA-listed species and/or designated critical habitat(s) under the jurisdiction of the USFWS and/or NMFS are likely to occur in or near your site's "action area," and you certify to EPA that your site's discharges and discharge-related activities are not likely to result in any short- or long-term adverse effects to ESA-listed threatened or endangered species and/or designated critical habitat. This certification may include consideration of any stormwater controls and/or management practices you will adopt to ensure that your discharges and discharge-related activities are not likely to result in any short- or long-term adverse effects to ESA-listed species and/or designated critical habitat. To certify your eligibility under this criterion, indicate 1) the ESA-listed species and/or designated habitat located in your "action area" using the process outlined in Appendix C of this permit; 2) the distance between the site and the listed species and/or designated critical habitat in the action area (in miles); and 3) a rationale describing specifically how short- or long-term adverse effects to ESA-listed species will be avoided from the discharges and discharge-related activities. (Note: You must include a copy of your site map from your SWPPP showing the upland and in-water extent of your "action area" with your NOI.)
- ☐ Check to confirm you have provided documentation in your SWPPP as required by VI CGP Appendix C.

Documentation: The Biological Study prepared by Kadison Islands Consulting, LLC concluded that no threatened or endangered species were observed within the development area; however, the site conditions found it falls well within the habitat preference of the federally protected tree boas, but none were observed on-site during the study investigations. Tree boas are largely nocturnal, therefore there is a reasonable chance that they inhabit the property and particular care should be taken to protect the endangered species including the tree boa if present. A copy of the study is included in this Coastal Zone Management Permit Application.

- ☐ Criterion D: Coordination with USFWS and/or NMFS has successfully concluded. Coordination between you and the USFWS and/or NMFS has concluded. The coordination must have addressed the effects of your site's discharges and discharge-related activities on ESA-listed species and/or designated critical habitat under the jurisdiction of USFWS and/or NMFS, and resulted in a written confirmation from USFWS and/or NMFS that the effects of your site's discharges and discharge-related activities are not likely to result in any short- or long-term adverse effects. By certifying eligibility under this criterion, you agree to comply with any conditions you must meet for your site's discharges and discharge-related activities to not likely result in any short- or long-term adverse effects. You must include copies of the correspondence with the participating agencies in your SWPPP and this NOI.
- ☐ Check to confirm you have provided documentation in your SWPPP as required by VI CGP Appendix C.

Documentation: Insert Text Here

Eligibility Criterion

Following the process outlined in Appendix C of the VI CGP, under which criterion are you eligible for coverage under this permit?

- ☐ Criterion E: ESA Section 7 consultation has successfully concluded. Consultation between a Federal agency and the USFWS and/or NMFS under section 7 of the ESA has concluded. Consultations can be either formal or informal, and would have occurred only as a result of a separate Federal action (e.g., during application for an individual wastewater discharge permit or the issuance of a wetlands dredge and fill permit), and the consultation must have addressed the effects of your construction activity's discharges and discharge-related activities on all ESA-listed threatened or endangered species and all designated critical habitat under the jurisdiction of each Service, as appropriate, in your action area. The result of this consultation must be either:
- i. A biological opinion currently in effect that determined that the action in question (taking into account the effects of your facility's discharges and discharge-related activities) is likely to adversely affect, but is not likely to jeopardize the continued existence of listed species or result in the destruction or adverse modification of critical habitat. The biological opinion must have included the effects of your facility's discharges and discharge-related activities on all the listed species and designated critical habitat in your action area under the jurisdiction of each Service, as appropriate. To be eligible under (i), any reasonable and prudent measures specified in the incidental take statement must be implemented;
 - ii. Written concurrence (e.g., letter of concurrence) from the applicable Service(s) with a determination that your facility's discharges and discharge-related activities are not likely to adversely affect ESA-listed species and/or designated critical habitat. The concurrence letter must have included the effects of your facility's discharges and discharge-related activities on all the ESA-listed species and/or designated critical habitat on your species list(s) acquired from USFWS and/or NMFS as part of this worksheet.

The consultation does not warrant reinitiation under 50 CFR §402.16; or, if reinitiation of consultation is required (e.g., due to a new species listing, critical habitat designation, or new information), the Federal action agency has reinitiated the consultation and the result of the consultation is consistent with the statements above. (Note: you must include any reinitiation documentation from the Services or consulting Federal agency with your NOI.) -

- ☐ Check to confirm you have provided documentation in your SWPPP as required by VI CGP Appendix C.

Documentation: Insert Text Here

Eligibility Criterion

Following the process outlined in Appendix C of the VI CGP, under which criterion are you eligible for coverage under this permit?

- ☐ Criterion F: Issuance of section 10 permit. Potential take is authorized through the issuance of a permit under section 10 of the ESA by the USFWS and/or NMFS, and this authorization addresses the effects of the site's discharges and discharge-related activities on ESA-listed species and designated critical habitat. You must include copies of the correspondence between yourself and the participating agencies in your SWPPP and your NOI.
- ☐ Check to confirm you have provided documentation in your SWPPP as required by VI CGP Appendix C.

Documentation: Insert Text Here

3.2 *Historic Property Screening Process*

Appendix D, Step 1

Do you plan on installing any stormwater controls that require subsurface earth disturbance, including, but not limited to, any of the following stormwater controls at your site?

No subsurface earth disturbance of any stormwater controls is proposed for this project. Due to all stormwater runoff discharging into the coast and downstream flooding not being a concern, stormwater retention/detention via an infiltration basin is not proposed.

Temporary mulch berms have been installed on-site at the bottom of all downhill slopes for the area that has been partially cleared per an approved Permit Letter Request received in 2023. For the remaining brush and vegetation to be cleared, temporary mulch berms will be installed in a similar way. Permanent rock berms are proposed in locations within the project area that experience concentrated flow to account for any additional runoff rates and erosion. A copy of the Erosion Control Plan and Grading Plan are included in this Coastal Zone Management Permit Application.

Appendix D, Step 2

If you answered yes in Step 1, have prior professional cultural resource surveys or other evaluations determined that historic properties do not exist, or have prior disturbances at the site have precluded the existence of historic properties? ☐ YES ☐ NO

- If yes, no further documentation is required for Section 3.2 of the Template, and you may provide the prior documentation in your SWPPP.
- If no, proceed to Appendix D, Step 3.

Appendix D, Step 3

If you answered no in Step 2, have you determined that your installation of subsurface earth-disturbing stormwater controls will have no effect on historic properties? ☐ YES ☐ NO

- If yes, provide documentation of the basis for your determination.
- If no, proceed to Appendix D, Step 4.

Appendix D, Steps 4 and 5

If you answered no in Step 3, did the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Office (THPO), or other Tribal representative (whichever applies) respond to you within 15 calendar days to indicate their views as to the likelihood that historic properties are potentially present on your site and may be impacted by the installation of stormwater controls that require subsurface earth disturbance? ☐ YES ☐ NO

- If yes, describe the nature of their response:
 - ☐ Written indication that no historic properties will be affected by the installation of stormwater controls.
 - ☐ Written indication that adverse effects to historic properties from the installation of stormwater controls can be mitigated by agreed upon actions.
 - ☐ No agreement has been reached regarding measures to mitigate effects to historic properties from the installation of stormwater controls.
 - ☐ Other:
- If no, no further documentation is required for Section 3.2 of the Template.

3.3 *Safe Drinking Water Act Underground Injection Control Requirements*

Do you plan to install any of the following controls? Check all that apply below.

No.

- ☐ Infiltration trenches (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)
- ☐ Commercially manufactured pre-cast or pre-built proprietary subsurface detention vaults, chambers, or other devices designed to capture and infiltrate stormwater flow
- ☐ Drywells, seepage pits, or improved sinkholes (if stormwater is directed to any bored, drilled, driven shaft or dug hole that is deeper than its widest surface dimension, or has a subsurface fluid distribution system)

SECTION 4: EROSION AND SEDIMENT CONTROLS AND DEWATERING PRACTICES

4.1 Natural Buffers or Equivalent Sediment Controls

Buffer Compliance Alternatives

Are there any receiving waters within 50 feet of your project's earth disturbances? ☐ YES ☒ NO

4.2 Perimeter Controls

General

- The site is currently being cleared based on an approved Permit Letter Request. Excess cleared vegetation can be moved to the bottom of the downhill slopes of the project area and formed into a berm to prevent the runoff from carrying any sediment off-site. Other erosion control methods currently implemented on-site are mulch-in-place and silt fencing where both have proven to be very effective construction means and methods and will continue to be used throughout the duration of construction for the project.

Specific Perimeter Controls

Mulch Berm	
Description: Vegetation is being cleared with a low ground pressure skid steer or track excavator with a mulching attachment to remove and grind the trees and vegetation within 2 inches of the existing ground surface. All roots and stumps are being left in place with no soil/earth disturbances. Excess mulch can be formed into a berm at the bottom of the downhill slopes of the proposed work area for erosion control measures.	
Installation	10/14/2025
Maintenance Requirements	Berm should be inspected immediately after each rainfall event and at least daily during prolonged rainfall. Needed repairs to the berm must be made immediately. Remove any debris that comes into contact with berm.

4.3 Sediment Track-Out

General

- Temporary construction access/exit was installed in the western part of the site to prevent track-out of sediment from the site while the approved clearing is being performed and shall remain in place until construction is completed.

Specific Track-Out Controls

Stabilized Construction Exit	
Description: 50' long and 20' wide, 6" minimum depth gravel construction entrance. 2"-3" diameter crushed stone minimum placed over a geotextile fabric.	
Installation	10/14/2025
Maintenance Requirements	Add gravel when necessary to maintain effective construction entrance throughout project construction.
Design Specifications	Details provided

4.4 *Stockpiles or Land Clearing Debris Piles Comprised of Sediment or Soil*

The construction may include small amounts of excavation of areas needing cut ins/steps within the steep slopes on-site for installation of the racking system, but no stockpiles of sediment are anticipated during construction of the project.

4.5 *Minimize Dust*

General

- The Contractor is responsible for sweeping their own travel ways and the area located within 100 feet of the entrances and exits of the construction work zone. Sweeping will be conducted as needed to prevent the tracking of sediment/dust on the public roadway.

Specific Dust Controls

Water Truck	
Description: ▪ During construction, the smallest practical portion of the project area will be disturbed at one time to minimize the potential for dust generation. ▪ A water truck will be used to wet exposed areas within the work limits as needed for dust suppression. ▪ As with the tact-out controls discussed above, sediments on the paved areas outside of the work limits will be removed by sweeping to suppress dust generated by vehicle traffic.	
Installation	10/14/2025
Maintenance Requirements	Wet exposed areas within the work limits as needed for dust suppression.
Design Specifications	Refer to project specifications.

4.6 *Minimize Steep Slope Disturbances*

General

- Certain embankments and shoulders where work will be performed may feature steep slopes where cut ins and/or steps may need to be constructed for the installation of the proposed project on an as needed basis. Areas that require cut ins and/or steps shall be regularly inspected and protected from erosion with BMPs and Erosion Control Methods such as natural spray tack adhesive and additional silt fencing, as needed, before it results in sediment discharges/releases. Permanent stabilization will be provided by loaming and seeding slopes with grass in areas that appear bare after construction.

Specific Steep Slope Controls

Slope Stabilization	
Description: Steep slopes work will be performed as work encounters them.	
Installation	11/1/2025
Maintenance Requirements	Contractor shall maintain erosion controls in a functional condition at all times, including inspections once every seven (7) calendar days and within 24 hours of the occurrence of a storm event that produces 0.25 inches or more of rain within a 24-hour period. All damaged areas shall be replaced immediately.
Design Specifications	Refer to project specifications.

4.7 Topsoil

General

- Native topsoil shall be preserved unless infeasible. Preserving native topsoil is not required where the intended function of a specific area of the site calls for topsoil to be disturbed or removed. If suitable topsoil is found in disturbed areas, it will be removed and stockpiled and temporarily seeded until ready to use.
- Vegetation will be cleared and mulched to be spread over topsoil. This mulch will prevent erosion of the topsoil during construction activities.

4.8 Soil Compaction

General

- Vehicle and equipment use shall be avoided in areas where seeding and vegetative stabilization will occur to avoid compaction of soil. Prior to seeding in areas of disturbed soils, the contractor shall condition the soil as necessary to support vegetative growth.

4.9 Storm Drain Inlets

Not required for this project.

4.10 Constructed Site Drainage Feature

Not required for this project.

4.11 Sediment Basins or Similar Impoundments

Not required for this project.

4.12 Chemical Treatment

No chemical treatment is anticipated.

4.13 Dewatering Practices

No dewatering is anticipated for this project.

4.14 Other Stormwater Controls

None used.

4.15 Site Stabilization

Total Amount of Land Disturbance Occurring at Any One Time

- ☐ Five Acres or less
☒ More than Five Acres

Seeding	
☒ Vegetative ☐ Non-Vegetative ☐ Temporary ☒ Permanent	
Description: Contractor shall implement and maintain stabilization measures that minimize erosion from any areas of exposed soil on the site. Disturbed soils will be seeded with a seed mix that matches existing grasses.	
Installation	Refer to project schedule
Completion	Refer to project schedule
Maintenance Requirements	- Any grassed areas disturbed by the work shall be restored with loam and seed. - Contractor shall reseed and if necessary maintain until grass has grown. - Landscaped areas disturbed by work shall be restored to existing conditions.
Design Specifications	Refer to project specifications for seeding requirements.

Mulching	
☐ Vegetative ☒ Non-Vegetative ☒ Temporary ☐ Permanent	
Description: Contractor shall mulch cleared vegetation and spread over disturbed areas to provide protection from erosion	
Installation	Refer to project schedule
Completion	Refer to project schedule
Maintenance Requirements	Mulch shall be reapplied in areas where mulch has been removed or no longer provides adequate protection during construction.

SECTION 5: POLLUTION PREVENTION CONTROLS

5.1 *Potential Sources of Pollution*

Construction Site Pollutants

Potential sources of sediment come from: Clearing and grubbing activities, any site grading or excavation, vehicle tracking, topsoil stripping and stockpiling, and landscaping activities.

Potential pollutants and sources come from sanitary facilities, heavy equipment and vehicles, and materials storage areas.

Pollutant-Generating Activity	Pollutants or Pollutant Constituents (That could be discharged if exposed to stormwater)	Location on Site (Or reference SWPPP site map where this is shown)
Organic Fertilizer	Nitrogen and phosphates	Open seeded areas for final stabilization
Concrete	Limestone, sand, pH, chromium	Equipment pads, fence posts
Hydraulic Oil/Fluids	Mineral oil, petroleum distillates	Leaks or broken equipment
Gasoline	Benzene, ethyl benzene, toluene, xylene, MTBE	Staging areas
Diesel Fuel	Petroleum distillate, oil and grease, naphthalene, xylenes	Staging areas
Antifreeze/coolant	Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc)	Leaks or broken equipment hoses
Temporary Sanitary Facilities	Bacteria, parasites, viruses, funguses	Staging areas

5.2 Spill Prevention and Response

In the event of a spill an on-site spill kit shall be available to contain and remove the spill. In the event the spill cannot be contained and removed with the on-site spill kit, immediately notify emergency personnel.

5.3 Fueling and Maintenance of Equipment or Vehicles

General

- A variety of vehicles and equipment will be used on-site. Care shall be taken to eliminate discharge of any spilled or leaked chemicals, including fuel, from the project area. All fueling will be performed off-site. When fueling must occur on-site, the area shall be protected by secondary containment.

Specific Pollution Prevention Practices

Daily Inspection	
Description: All vehicles shall be inspected prior to use daily for leaks, damage, and other problems and brought up to the site superintendent. Leaks shall be repaired immediately, or the equipment shall be removed from the site.	
Implementation	Inspections are daily starting during mobilization until the end of the project.
Maintenance Requirements	Daily inspections will occur prior to work.

5.4 Washing of Equipment and Vehicles

General

- Equipment will generally be washed off location. When done on site, it shall be done in a contained area without detergents.

5.5 Storage, Handling, and Disposal of Building Products, Materials, and Wastes

5.5.1 Building Materials and Building Products

General

- Building materials will be stockpiled in a designated staging area when kept on site.

5.5.2 Pesticides, Herbicides, Insecticides, Fertilizers, and Landscape Materials

No pesticides, herbicides, or insecticides are anticipated to be used.

Landscape materials will be stored at a combined staging area and materials storage area.

Storage in Containers in Materials Storage Area	
Description: Secure containers to contain materials in the staging area.	
Implementation	11/1/2025
Maintenance Requirements	Inspections must be performed once every seven (7) calendar days and within 24 hours of the occurrence of a storm event that produces 0.25 inches or more of rain within a 24-hour period.

5.5.3 *Diesel Fuel, Oil, Hydraulic Fluids, Other Petroleum Products, and Other Chemicals*

No diesel fuel, oil, hydraulic fluids, or other petroleum products or other chemicals are anticipated to be stored on site.

5.5.4 *Hazardous or Toxic Waste*

General

- Diesel fuel, oil, hydraulic fluids, other petroleum products, and other chemicals will be limited in scope of use and preferably stored off-Site; if they must be stored on site, they will be stored at a combined staging area and materials storage area within a secure and covered area. In the event of any spills, the spill must be reported to the appropriate authorities and the engineer.

5.5.5 *Construction and Domestic Waste*

General

- Waste will be stored in appropriate waste containers in the staging area until disposed of. All waste shall be disposed of properly by the contractor in accordance with all local, state, and federal regulations. No waste shall be buried or dumped on the project site.

5.5.6 *Sanitary Waste*

General

- Portable toilets may be provided at the site throughout the construction phase. Toilets will be secure to not be tipped or knocked over. Waste will be collected from the portable facilities as needed to keep sanitary conditions. Toilets will be inspected regularly for evidence of leaking holding tanks. Toilets with leaking holding tanks will be removed and replaced with new toilets.

5.6 *Washing of Applicators and Containers used for Stucco, Paint, Concrete, Form Release Oils, Cutting Compounds, or Other Materials*

Not to be performed on site during construction.

5.7 *Application of Fertilizers*

General

- Commercial fertilizer shall be a product complying with the local and United States fertilizer laws. Fertilizer for planting shall be formulated for top-dressing, soil surface application to plants. Fertilizer shall be designed and certified by the manufacturer to provide controlled release of fertilizer continuously for not less than 9 months. One hundred percent of the nitrogen content shall be derived from organic materials. Nitrogen source shall be coated to ensure slow release. Fertilizer will not be kept on-site and only small volumes will be brought for use.

5.8 *Other Pollution Prevention Practices*

No other pollution prevention practices are anticipated.

SECTION 6: INSPECTION, MAINTENANCE, AND CORRECTIVE ACTION

6.1 *Inspection Personnel and Procedures*

Site Inspection Schedule

Standard Frequency:
☒ Every 7 calendar days ☐ Every 14 calendar days and within 24 hours of either: ▪ A storm event that produces 0.25 inches or more of rain within a 24-hour period (including when there are multiple, smaller storms that alone produce less than 0.25 inches but together produce 0.25 inches or more in 24 hours), or ▪ A storm event that produces 0.25 inches or more of rain within a 24-hour period on the first day of a storm and continues to produce 0.25 inches or more of rain on subsequent days (you conduct an inspection within 24 hours of the first day of the storm and within 24 hours after the last day of the storm that produces 0.25 inches or more of rain (i.e., only two inspections would be required for such a storm event)), or ▪ A discharge caused by snowmelt from a storm event that produces 3.25 inches or more of snow within a 24-hour period.
Increased Frequency (if applicable):
For areas of sites discharging to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3 ☐ Every 7 days and within 24 hours of either: ▪ A storm event that produces 0.25 inches or more of rain within a 24-hour period, or ▪ A discharge caused by snowmelt from a storm event that produces 3.25 inches or more of snow within a 24-hour period.
Reduced Frequency (if applicable)
For stabilized areas ☐ Twice during first month, no more than 14 calendar days apart; then once per month after first month until permit coverage is terminated consistent with Part 8 in any area of your site where the stabilization steps in 2.2.1.2a and 2.2.1.2b have been completed.
For stabilized areas on “linear construction sites” (as defined in Appendix A) ☐ Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of a storm event that produces 0.25 inches or more of rain within a 24-hour period, or within 24 hours of a snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period

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For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought ☐ Once per month and within 24 hours of either: ▪ A storm event that produces 0.25 inches or more of rain within a 24-hour period, or ▪ A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period. Insert beginning and ending month identified as the seasonally dry period for your area or the valid period of drought: ▪ Beginning month of the seasonally dry period: 1/1/2025 ▪ Ending month of the seasonally dry period: 4/30/2025
For frozen conditions where construction activities are being conducted ☐ Once per month Insert beginning and ending dates of frozen conditions on your site: ▪ Beginning date of frozen conditions: Insert approximate date ▪ Ending date of frozen conditions: Insert approximate date
For frozen conditions where construction activities are suspended ☐ Inspections are temporarily suspended Insert beginning and ending dates of frozen conditions on your site: ▪ Beginning date of frozen conditions: Insert approximate date ▪ Ending date of frozen conditions: Insert approximate date

Dewatering Inspection Schedule

Dewatering Inspection
☐ Once per day on which the discharge of dewatering water occurs.

Rain Gauge Location (if applicable)
<https://forecast.weather.gov/MapClick.php?lat=17.7123&lon=-64.8436>

Inspection Report Forms
See Appendix D of this SWPPP for Site Inspection Report Form

6.2 *Corrective Action*

Personnel Responsible for Corrective Actions
Christian Loranger
508-965-8637
nbsdolar@gmail.com

Corrective Action Logs
See Appendix E of this SWPPP for Corrective Action Logs

6.3 *Delegation of Authority*

Duly Authorized Representative(s) or Position(s):

Quantum Solar, LLC
Subsidiary of Vielectron, LLC
Christian Loranger
Owner
5000 Est. Enighed, Ste 4a PMB 146 St. John, U.S.V.I 00830
Phone: 508-965-8637
nbd solar@gmail.com

VIELECTRON, LLC
Christian Loranger
Operator
5000 Est. Enighed, Ste 4a PMB 146 St. John, U.S.V.I 00830
Phone: 508-965-8637
nbd solar@gmail.com

SECTION 7: TURBIDITY BENCHMARK MONITORING FOR DEWATERING DISCHARGES

Not anticipated for this project

SECTION 8: CERTIFICATION AND NOTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: Christian Loranger Title: Owner / Developer / Operator

Signature: _____ Date: _____

SWPPP APPENDICES

Attach the following documentation to the SWPPP:

Appendix A – Site Maps

Appendix B – Copy of 2012 VI CGP

Appendix C – NOI and EPA Authorization Email

Appendix D – Site Inspection Form and Dewatering Inspection Form (if applicable)

Appendix E – Corrective Action Log

Appendix F – SWPPP Amendment Log

Appendix G – Subcontractor Certifications/Agreements

Appendix H – Grading and Stabilization Activities Log

Appendix I – Training Documentation

Appendix J – Delegation of Authority

Appendix K – Endangered Species Documentation

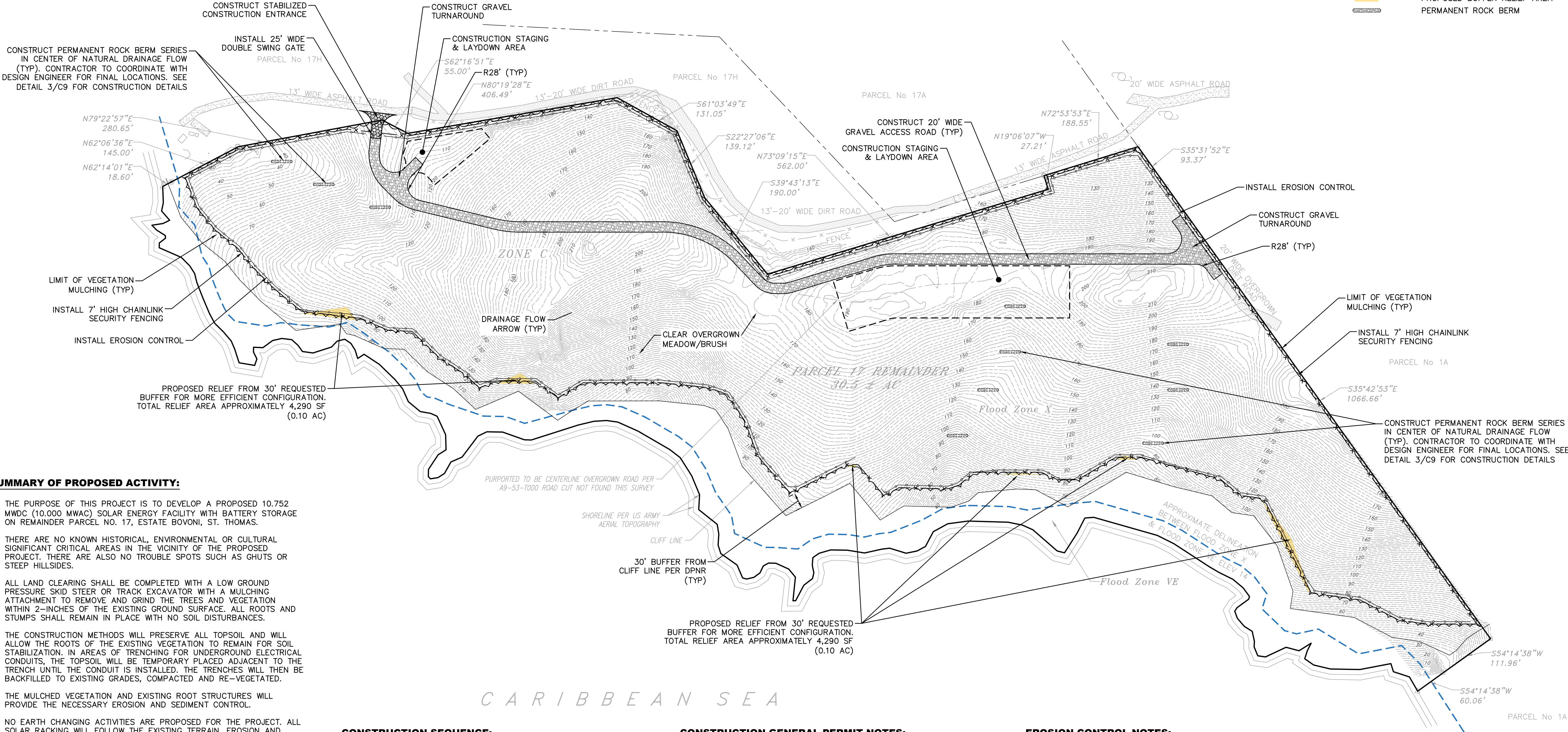
Appendix L – Historic Preservation Documentation

Appendix M – Rainfall Gauge Recording

*Appendix N – Turbidity **Mefer Manual and Manufacturer's Instructions***

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix A – Site Maps



SUMMARY OF PROPOSED ACTIVITY:

- THE PURPOSE OF THIS PROJECT IS TO DEVELOP A PROPOSED 10.752 MWDC (10,000 MWAC) SOLAR ENERGY FACILITY WITH BATTERY STORAGE ON REMAINDER PARCEL NO. 17, ESTATE BOVONI, ST. THOMAS.
- THERE ARE NO KNOWN HISTORICAL, ENVIRONMENTAL OR CULTURAL SIGNIFICANT CRITICAL AREAS IN THE VICINITY OF THE PROPOSED PROJECT. THERE ARE ALSO NO TROUBLE SPOTS SUCH AS GHUTS OR STEEP HILLSIDES.
- ALL LAND CLEARING SHALL BE COMPLETED WITH A LOW GROUND PRESSURE SKID STEER OR TRACK EXCAVATOR WITH A MULCHING ATTACHMENT TO REMOVE AND GRIND THE TREES AND VEGETATION WITHIN 2-INCHES OF THE EXISTING GROUND SURFACE. ALL ROOTS AND STUMPS SHALL REMAIN IN PLACE WITH NO SOIL DISTURBANCES.
- THE CONSTRUCTION METHODS WILL PRESERVE ALL TOPSOIL AND WILL ALLOW THE ROOTS OF THE EXISTING VEGETATION TO REMAIN FOR SOIL STABILIZATION. IN AREAS OF TRENCHING FOR UNDERGROUND ELECTRICAL CONDUITS, THE TOPSOIL WILL BE TEMPORARY PLACED ADJACENT TO THE TRENCH UNTIL THE CONDUIT IS INSTALLED. THE TRENCHES WILL THEN BE BACKFILLED TO EXISTING GRADES, COMPACTED AND RE-VEGETATED.
- THE MULCHED VEGETATION AND EXISTING ROOT STRUCTURES WILL PROVIDE THE NECESSARY EROSION AND SEDIMENT CONTROL.
- NO EARTH CHANGING ACTIVITIES ARE PROPOSED FOR THE PROJECT. ALL SOLAR RACKING WILL FOLLOW THE EXISTING TERRAIN. EROSION AND SEDIMENT CONTROL WILL BE IMPLEMENTED AS OUTLINED ABOVE.
- EROSION CONTROL AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER MAJOR STORM EVENTS. IF THE PROPOSED CONTROL MEASURES ARE INSUFFICIENT IN ANY AREAS A MULCH BERM WILL BE INSTALLED TO FOR EROSION AND SEDIMENT CONTROL.
- THE EXISTING TERRAIN, STORMWATER FLOW PATHS AND GROUND COVER WILL NOT BE CHANGED BY THE CONSTRUCTION OF THIS PROJECT. CURRENTLY STORMWATER SHEET FLOWS SOUTH AND DISCHARGES INTO THE CARIBBEAN SEA. THE DEVELOPMENT OF THE SITE WILL RESULT IN A MINIMAL INCREASE IN IMPERVIOUS COVER FROM THE GROUND SCREWS, EQUIPMENT PADS AND ACCESS DRIVEWAY AS THE AREA BELOW AND AROUND THE PANELS WILL REMAIN PERVIOUS WITH ESTABLISHED VEGETATION. THERE ARE MINIMAL CONCERNS WITH DOWNSTREAM FLOODING DUE TO THE SITE DISCHARGING INTO THE SEA; THEREFORE, NO INFILTRATION BASIN IS PROPOSED FOR RETENTION PURPOSES. PERMANENT ROCK BERM SERIES ARE PROPOSED IN AREAS ON-SITE WITH CONCENTRATED FLOW PATHS TO REDUCE PEAK RUNOFF RATES AND PREVENT EROSION.
- THE SITE SHALL BE INSPECTED AFTER ALL MAJOR STORM EVENTS. ANY DEFICIENCIES IN THE EROSION CONTROL AND VEGETATION SHALL BE CORRECTED IN A TIMELY MANNER.
- THERE IS NO PROPOSED WATER, SEWER OR LIGHTING AS PART OF THIS PROJECT.

CONSTRUCTION SEQUENCE:

- SURVEY AND STAKE LIMITS OF ALL WORK.
- CONSTRUCT STABILIZED CONSTRUCTION ENTRANCES AS SHOWN ON PLANS.
- INSTALL SILT FENCE (OR APPROVED EQUAL) PERIMETER EROSION CONTROL MEASURES.
- CLEAR TREES, BRUSH AND VEGETATION WITHIN SECURITY FENCE AND AROUND THE PERIMETER AS SHOWN.
- INSTALL 7' HIGH CHAINLINK SECURITY FENCING AND GATES AS SHOWN.
- OBTAIN DPW DRIVEWAY PERMITS AND CONSTRUCT 20' WIDE GRAVEL ACCESS DRIVEWAYS AND TURNAROUND.
- CONSTRUCT STORMWATER BPM AS SHOWN ON PLANS.
- INSTALL SOLAR RACKING SCREWS
- CONSTRUCT SOLAR RACKING AND INSTALL SOLAR PANELS ON RACKING.
- INSTALL UNDERGROUND CONDUIT, PV INVERTERS, EQUIPMENT PADS, BATTERIES AND POWER POLES.
- APPLY EROSION CONTROL LOW HEIGHT GRASS MIX TO ANY DISTURBED VEGETATION AREAS THROUGHOUT THE SITE.

CONSTRUCTION GENERAL PERMIT NOTES:

- THE OWNER IN CONJUNCTION WITH THE CONTRACTOR (OPERATOR) NEEDS TO OBTAIN A CONSTRUCTION GENERAL PERMIT (CGP) FOR LARGE CONSTRUCTION ACTIVITIES (FIVE OR MORE ACRES) FROM THE ENVIRONMENTAL PROTECTION AGENCY (EPA). AS PART OF THE CGP, A STORM WATER NOTICE OF INTENT (NOI) WILL NEED TO BE SUBMITTED TO THE EPA AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE NOI WILL NEED TO BE SUBMITTED TO STORM WATER NOTICE OF INTENT (4203M), USEPA, 1200 PENNSYLVANIA, AVE. NW, WASHINGTON, DC 20460.
- THE CGP OUTLINES A SET OF PROVISIONS MANDATING THE OWNER AND CONTRACTOR COMPLY WITH THE REQUIREMENTS OF THE TERRITORIAL VIRGIN ISLANDS STORM WATER POLLUTION PREVENTION PLANS (VI SWPPP) STORM WATER REGULATIONS, INCLUDING BUT NOT LIMITED TO, STORM WATER POLLUTION PREVENTION PLANS (SWPPP'S), IMPLEMENTATION OR EROSION AND SEDIMENTATION CONTROLS, EQUIPMENT MAINTENANCE GUIDELINES, ETC. PLEASE CONTACT USEPA OFFICE OF WASTEWATER MANAGEMENT AT 202-564-9545 OR AT WWW.EPA.GOV/NPDES/STORMWATER FOR ADDITIONAL INFORMATION.

EROSION CONTROL NOTES:

- ALL EROSION CONTROL MEASURE SHALL CONFORM TO THE GUIDELINES AND REQUIREMENTS PROVIDED IN THE VIRGIN ISLANDS ENVIRONMENTAL PROTECTION HANDBOOK (VIEPH), 2022 EDITION. THE HANDBOOK MAY BE DOWNLOADED ONLINE OR PURCHASED FROM THE UNIVERSITY OF THE VIRGIN ISLANDS, COOPERATIVE EXTENSION SERVICE.
- BEFORE ANY EARTH MOVING ACTIVITIES, AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. THE SMALLEST PRACTICAL AREA OF LAND (5 ACRES MAXIMUM) SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHOULD BE KEPT TO A MAXIMUM OF 72 HOURS BEFORE APPLYING TEMPORARY OR PERMANENT EROSION CONTROL MEASURES. CONFINED PERIOD OF DISTURBED AND UNSTABILIZED SOILS TO A MAXIMUM OF FORTY-FIVE DAYS. ALL DITCHES AND SWALES ARE REQUIRED TO BE STABILIZED PRIOR TO DIRECT RECEIPT OF ANY FLOW.
- REFER TO DWG C7 FOR ADDITIONAL EROSION CONTROL NOTES AND DETAILS.



LEGEND	
	SUBJECT PROPERTY LINE
	ABUTTER PROPERTY LINE
	STRUCTURE SETBACK
	FLOOD ZONE LINE
	EX. MINOR CONTOUR
	EX. MAJOR CONTOUR
	PROPOSED SECURITY FENCE
	LIMIT OF MULCHING
	SILT SOCK OR MULCH BERM
	CONSTRUCTION STAGING AREA
	DRAINAGE FLOW
	CONSTRUCTION ENTRANCE
	GRAVEL
	PROPOSED BUFFER RELIEF AREA
	PERMANENT ROCK BERM

FOR PERMITTING PURPOSES ONLY

REV.	DESCRIPTION	DATE
1	ISSUED FOR DPNR & DPW PERMITTING - NOT FOR CONSTRUCTION	10/15/25

THIS DOCUMENT IS PREPARED AS AN INSTRUMENT OF SERVICE AND IS THE PROPERTY OF HOYLE TANNER. IT MAY NOT BE USED, REPRODUCED, DISSEMINATED OR TRANSFERRED IN ANY MANNER, OR FOR ANY OTHER PURPOSE THAN THE PROJECT, WITHOUT THE WRITTEN PERMISSION OF HOYLE TANNER.	CHECKED BY WRD
DRAWN BY SES	DESIGNED BY SES

95 E. Mitchell-Hamrick Road
Oviedo, FL 32765
(407) 380-1919
www.foyletanner.com

DATE:
SEPTEMBER 19, 2024

SCALE:
AS SHOWN

APPLICANT QUANTUM SOLAR LLC A VIELECTRON LLC COMPANY 5000 EST ENIGHER ST. 4A, PMB 146 SAINT JOHN, VI 00830	PROJECT PROPOSED SOLAR ENERGY FACILITY BOVONI 17 REMAINDER ESTATE BOVONI SAINT THOMAS, VI 00804
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SITE PREP / EROSION CONTROL PLAN
C3
PROJECT NO. 23.141001.00
SHEET 3 OF 9

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix B – Copy of 2012 VI CGP

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix C – Copy of NOI and EPA Authorization Email

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix D – Copy of Site and Dewatering Inspection Forms

Section A – General Information (If necessary, complete additional inspection reports for each separate inspection location.)	
Inspector Information	
Inspector Name:	Title:
Company Name:	Email:
Address:	Phone Number:
Inspection Details	
Inspection Date:	Inspection Location:
Inspection Start Time:	Inspection End Time:
Current Phase of Construction:	Weather Conditions During Inspection:
Did you determine that any portion of your site was unsafe for inspection per CGP Part 4.5? ☐ Yes ☐ No If “Yes,” provide the following information: Location of unsafe conditions: The conditions that prevented you inspecting this location:	
Indicate the required inspection frequency: (Check all that apply. You may be subject to different inspection frequencies in different areas of the site.)	
Standard Frequency (CGP Part 4.2): ☐ At least once every 7 calendar days; OR ☐ Once every 14 calendar days <i>and</i> within 24 hours of the occurrence of either: • A storm event that produces 0.25 inches or more of rain within a 24-hour period, or • A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period	
Increased Frequency (CGP Part 4.3.1) (If site discharges to sediment or nutrient-impaired waters or to waters designated as Tier 2, Tier 2.5, or Tier 3): ☐ Once every 7 calendar days <i>and</i> within 24 hours of the occurrence of either: • A storm event that produces 0.25 inches or more of rain within a 24-hour period, or • A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period	

Reduced Frequency (CGP Part 4.4):

- ☐ For stabilized areas: Twice during first month, no more than 14 calendar days apart; then once per month after first month until permit coverage is terminated
- ☐ For stabilized areas on "linear construction sites": Twice during first month, no more than 14 calendar days apart; then once more within 24 hours of the occurrence of either:
- A storm event that produces 0.25 inches or more of rain within a 24-hour period, or
 - A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period
- ☐ For arid, semi-arid, or drought-stricken areas during seasonally dry periods or during drought: Once per month and within 24 hours of the occurrence of either:
- A storm event that produces 0.25 inches or more of rain within a 24-hour period, or
 - A snowmelt discharge from a storm event that produces 3.25 inches or more of snow within a 24-hour period
- ☐ For frozen conditions where construction activities are being conducted: Once per month

Was this inspection triggered by a storm event producing 0.25 inches or more of rain within a 24-hour period? ☐ Yes ☐ No

If "Yes," how did you determine whether the storm produced 0.25 inches or more of rain?

- ☐ On-site rain gauge
- ☐ Weather station representative of site.
Weather station location:

Total rainfall amount that triggered the inspection (inches):

Was this inspection triggered by a snowmelt discharge from a storm event producing 3.25 inches or more of snow within a 24-hour period? ☐ Yes ☐ No

If "Yes," how did you determine whether the storm produced 3.25 inches or more of snow?

- ☐ On-site rain gauge
- ☐ Weather station representative of site.
Weather station location:

Total snowfall amount that triggered the inspection (inches):

Section B – Condition and Effectiveness of Erosion and Sediment (E&S) Controls (CGP Part 2.2) (Insert additional rows if needed)					
Type and Location of E&S Control	Conditions Requiring Routine Maintenance? ¹	If “Yes,” How Many Times (Including This Occurrence) Has This Condition Been Identified?	Conditions Requiring Corrective Action? ^{2, 3}	Date on Which Condition First Observed (If Applicable)?	Description of Conditions Observed
1.	☐ Yes ☐ No		☐ Yes ☐ No		
2.	☐ Yes ☐ No		☐ Yes ☐ No		
3.	☐ Yes ☐ No		☐ Yes ☐ No		
4.	☐ Yes ☐ No		☐ Yes ☐ No		
5.	☐ Yes ☐ No		☐ Yes ☐ No		
If the same routine maintenance was found to be necessary three or more times for the same control at the same location (including this occurrence), follow the corrective action requirements and record the required information in your corrective action log, or describe here why you believe the specific condition should still be addressed as routine maintenance:					

¹ Routine maintenance includes minor repairs or other upkeep performed to ensure that the site's stormwater controls remain in effective operating condition, not including significant repairs or the need to install a new or replacement control. Routine maintenance is also required for specific conditions: (1) for perimeter controls, whenever sediment has accumulated to half or more the above-ground height of the control (CGP Part 2.2.3.c.i); (2) where sediment has been tracked-out from the site onto paved roads, sidewalks, or other paved areas (CGP Part 2.2.4.d); (3) for inlet protection measures, when sediment accumulates, the filter becomes clogged, and/or performance is compromised (CGP Part 2.2.10.b); and (4) for sediment basins, as necessary to maintain at least half of the design capacity of the basin (CGP Part 2.2.12.f)

² Corrective actions are triggered only for specific conditions (CGP Part 5.1):

1. A stormwater control needs a significant repair or a new or replacement control is needed, or, in accordance with Part 2.1.4.c, you find it necessary to repeatedly (i.e., three (3) or more times) conduct the same routine maintenance fix to the same control at the same location (unless you document in your inspection report under Part 4.7.1.c that the specific reoccurrence of this same problem should still be addressed as a routine maintenance fix under 2.1.4); or
2. A stormwater control necessary to comply with the requirements of this permit was never installed, or was installed incorrectly; or
3. Your discharges are not meeting applicable water quality standards; or
4. A prohibited discharge has occurred (see CGP Part 1.3); or
5. During the discharge from site dewatering activities:
 - a. The weekly average of your turbidity monitoring results exceeds the 50 NTU benchmark (or alternate benchmark if approved by EPA pursuant to Part 3.3.2.b); or
 - b. You observe or you are informed by EPA, State, or local authorities of the presence of the conditions specified in Part 4.6.3.e.

³ If a condition on your site requires a corrective action, you must also fill out a corrective action log found at <https://www.epa.gov/npdes/construction-general-permit-resources-tools-and-templates>. See CGP Part 5.4 for more information.

Section C – Condition and Effectiveness of Pollution Prevention (P2) Practices and Controls (CGP Part 2.3)
 (Insert additional rows if needed)

Type and Location of P2 Practices and Controls	Conditions Requiring Routine Maintenance? ¹	If "Yes," How Many Times (Including This Occurrence) Has This Condition Been Identified?	Conditions Requiring Corrective Action? ^{2, 3}	Date on Which Condition First Observed (If Applicable)?	Description of Conditions Observed
1.	☐ Yes ☐ No		☐ Yes ☐ No		
2.	☐ Yes ☐ No		☐ Yes ☐ No		
3.	☐ Yes ☐ No		☐ Yes ☐ No		
4.	☐ Yes ☐ No		☐ Yes ☐ No		
5.	☐ Yes ☐ No		☐ Yes ☐ No		
If the same routine maintenance was found to be necessary three or more times for the same control at the same location (including this occurrence), follow the corrective action requirements and record the required information in your corrective action log, or describe here why you believe the specific condition should still be addressed as routine maintenance:					

Section D – Stabilization of Exposed Soil (CGP Part 2.2.14) (Insert additional rows if needed)					
Specific Location That Has Been or Will Be Stabilized	Stabilization Method and Applicable Deadline	Stabilization Initiated? If "Yes," date initiated:	Final Stabilization Criteria Met? If "Yes," date criteria met:	Final Stabilization Photos Taken?	Notes
1.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
2.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
3.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
4.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	
5.		☐ Yes ☐ No If "Yes," date initiated:	☐ Yes ☐ No If "Yes," date criteria met:	☐ Yes ☐ No	

Section E – Description of Discharges (CGP Part 4.6.2)

(Insert additional rows if needed)

Was a discharge (not including dewatering) occurring from any part of your site at the time of the inspection?⁴ ☐ Yes ☐ No

If “Yes,” for each point of discharge, document the following:

- The visual quality of the discharge.
- The characteristics of the discharge, including color; odor; floating, settled, or suspended solids; foam; oil sheen; and other indicators of stormwater pollutants.
- Signs of the above pollutant characteristics that are visible from your site and attributable to your discharge in receiving waters or in other constructed or natural site drainage features.

Discharge Location	Observations
1.	
2.	
3.	
4.	
5.	

⁴ If a dewatering discharge was occurring, you must conduct a dewatering inspection pursuant to CGP Part 4.3.2 and complete a separate dewatering inspection report.

Section F – Signature and Certification (CGP Part 4.7.2)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

MANDATORY: Signature of Operator or "Duly Authorized Representative:"

Signature:	Date:
Printed Name:	Affiliation:

OPTIONAL: Signature of Contractor or Subcontractor

Signature:	Date:
Printed Name:	Affiliation:

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix E – Copy of Corrective Action Log

2022 CGP Corrective Action Log

Project Name: Proposed Solar Energy Facility with Battery Storage - Bovoni

TPDES ID Number: _____

Section A – Individual Completing this Log	
Name:	Title:
Company Name:	Email:
Address:	Phone Number:
Section B – Details of the Problem (CGP Part 5.4.1.a) Complete this section <u>within 24 hours</u> of discovering the condition that triggered corrective action.	
Date problem was first identified:	Time problem was first identified:
What site conditions triggered this corrective action? <i>(Check the box that applies. See instructions for a description of each triggering condition (1 thru 6).)</i> ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5a ☐ 5b ☐ 6	
Specific location where problem identified:	
Provide a description of the specific condition that triggered the need for corrective action and the cause (if identifiable):	
Section C – Corrective Action Completion (CGP Part 5.4.1.b) Complete this section <u>within 24 hours</u> after completing the corrective action.	
For site condition # 1, 2, 3, 4, or 6 (those not related to a dewatering discharge) confirm that you met the following deadlines (CGP Part 5.2.1):	
☐ Immediately took all reasonable steps to address the condition, including cleaning up any contaminated surfaces so the material will not discharge in subsequent storm events. AND	
☐ Completed corrective action by the close of the next business day, unless a new or replacement control, or significant repair, was required. OR	
☐ Completed corrective action within seven (7) calendar days from the time of discovery because a new or replacement control, or significant repair, was necessary to complete the installation of the new or modified control or complete the repair. OR	
☐ It was infeasible to complete the installation or repair within 7 calendar days from the time of discovery. Provide the following additional information: Explain why 7 calendar days was infeasible to complete the installation or repair:	

Provide your schedule for installing the stormwater control and making it operational as soon as feasible after the 7 calendar days:

For site condition # 5a, 5b, or 6 (those related to a dewatering discharge), confirm that you met the following deadlines:

- ☐ Immediately took all reasonable steps to minimize or prevent the discharge of pollutants until a solution could be implemented, including shutting off the dewatering discharge as soon as possible depending on the severity of the condition taking safety considerations into account.
- ☐ Determined whether the dewatering controls were operating effectively and whether they were causing the conditions.
- ☐ Made any necessary adjustments, repairs, or replacements to the dewatering controls to lower the turbidity levels below the benchmark or remove the visible plume or sheen.

Describe any modification(s) made as part of corrective action: (Insert additional rows below if applicable)	Date of completion:	SWPPP update necessary?	If yes, date SWPPP was updated:
1.		☐ Yes ☐ No	
2.		☐ Yes ☐ No	

Section D - Signature and Certification (CGP Part 5.4.2)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information contained therein. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information contained is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

MANDATORY: Signature of Operator or "Duly Authorized Representative:"

Signature:	Date:
Printed Name:	Affiliation:

OPTIONAL: Signature of Contractor or Subcontractor

Signature:	Date:
Printed Name:	Affiliation:

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix F –SWPPP Amendment Log

No.	Description of the Amendment	Date of Amendment	Amendment Prepared by [Name(s) and Title]

Appendix G –Subcontractor Certifications/Agreements

SUBCONTRACTOR CERTIFICATION
STORMWATER POLLUTION PREVENTION PLAN

Project Number: _____

Project Title: _____

Operator(s): _____

As a subcontractor, you are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that you perform on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. You are encouraged to advise each of your employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the office trailer.

Each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement:

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

I certify under the penalty of law that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the practices described in the SWPPP.

This certification is hereby signed in reference to the above named project:

Company: _____

Address: _____

Telephone Number: _____

Type of construction service to be provided: _____

Signature: _____

Title: _____

Date: _____

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix H – Grading and Stabilization Activities Log

[illegible]

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix I –Training Documentation

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix J – Delegation of Authority Form

Delegation of Authority

I, _____ (name), hereby designate the person or specifically described position below to be a duly authorized representative for the purpose of overseeing compliance with environmental requirements, including the EPA's Construction General Permit (CGP), at the _____ construction site. The designee is authorized to sign any reports, stormwater pollution prevention plans and all other documents required by the permit.

(name of person or position)
(company)
(address)
(city, State, zip)
(phone)

By signing this authorization, I confirm that I meet the requirements to make such a designation as set forth in Appendix G of EPA's CGP, and that the designee above meets the definition of a "duly authorized representative" as set forth in Appendix G.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____

Company: _____

Title: _____

Signature: _____

Date: _____

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix K – Endangered Species Documentation

A copy of the Biological Study is included in this Coastal Zone Management Permit Application.

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix L – Historic Properties Documentation

No cultural resources were identified on-site. A copy of the Phase 1 (A&B) Archaeological Survey is included in this Coastal Zone Management Permit Application.

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix M – Rainfall Gauge Recording

Use the table below to record the rainfall gauge readings at the beginning and end of each work day. An example table follows.

Month/Year			Month/Year			Month/Year		
Day	Start time	End time	Day	Start time	End time	Day	Start time	End time
1			1			1		
2			2			2		
3			3			3		
4			4			4		
5			5			5		
6			6			6		
7			7			7		
8			8			8		
9			9			9		
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22			22			22		
23			23			23		
24			24			24		
25			25			25		
26			26			26		
27			27			27		
28			28			28		
29			29			29		
30			30			30		
31			31			31		

Stormwater Pollution Prevention Plan (SWPPP)
Proposed Solar Energy Facility with Battery Storage – Bovoni

Appendix N – Turbidity Monitoring Sampling Documentation

Not anticipated for this project

Attachment D – Biological Study



A BIOLOGICAL SURVEY BOVONI 17 REMAINDER ESTATE BOVONI, ST. THOMAS USVI

Prepared For



By
Kadison Islands Consulting, LLC
P.O. Box 305124
St. Thomas, U.S. Virgin Islands
00803

20 February 2024

A BIOLOGICAL SURVEY BOVONI 17 REMAINDER ESTATE BOVONI, ST. THOMAS USVI

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A BIOLOGICAL SURVEY

BOVONI 17 REMAINDER

ESTATE BOVONI, ST. THOMAS USVI

INTRODUCTION AND METHODS:

The proposed development of a solar field, on property at Bovoni 17 Remainder, initiated a biological study of the site that included a flora and fauna survey as well as a marine benthic survey in Stalley Bay, adjacent to the proposed property. The property for the proposed development is located on the eastern end of the island of St. Thomas in the United States Virgin Islands (USVI) along the southern shoreline. It lies south-southeast of the Bovoni landfill and southwest of the Mangrove Lagoon Wastewater Treatment Plant (Figures 1 and 2). The site is approximately 2.3 miles west of the city of Red Hook, 4 miles east of Charlotte Amalie, 6.4 miles east of Cyril E. King Airport and 4.8 miles south of Magens Bay. It is part of the Frenchman's watershed and gets most of its water from upland sheet runoff. The area is hilly and dry, with thin clay and bedrock that is exposed along the shore and ridgeline.

Between January 23 and February 10, 2024, a flora and fauna survey was conducted on the proposed site within the property boundaries. The survey was conducted on foot by two biologists, traversing the property on trails created by earth moving equipment from west to east along the approximate axis of the property. In addition, biologists bushwhacked and hiked along the southern coastline where trails had not been created, to capture primarily the coastal plant community. The surveyed routes were recording using an iPhone GPS in a hiking web application (<https://www.gaiagps.com>), and with a Garmin GPSMAP 79s (Figure 4). Three stations were chosen at which biologists sat quietly for 15-20 minutes to observe wildlife and listen for bird calls (Figure 4). Merlin, a Cornell University Ornithology Lab web application created to identify bird songs (<https://merlin.allaboutbirds.org>) was used throughout the terrestrial survey. Approximately eighteen hours were spent surveying the site, which covered approximately 30 acres.

On February 3, 2024, a marine benthic survey was conducted in and around Stalley Bay, south-southwest of the Bovoni proposed solar farm site. Biologists on snorkel gear swam the property shoreline out to approximately 100 m from land (Figure 3). This included an area of about 11,000 m². The benthic substrate was recorded and photographed, as were ecological marine communities. Endangered species or those of special concern were noted, mapped, and photographed.

The general terrestrial habitats were characterized and photographed and lists of plant species and vertebrate animals observed or detected were compiled. The marine habitat directly seaward of the

proposed development site was also characterized and photographed, with lists of plants, corals, macro-invertebrates and fish species compiled. A summary of survey findings and recommendations for sound ecologically conservative development is provided.

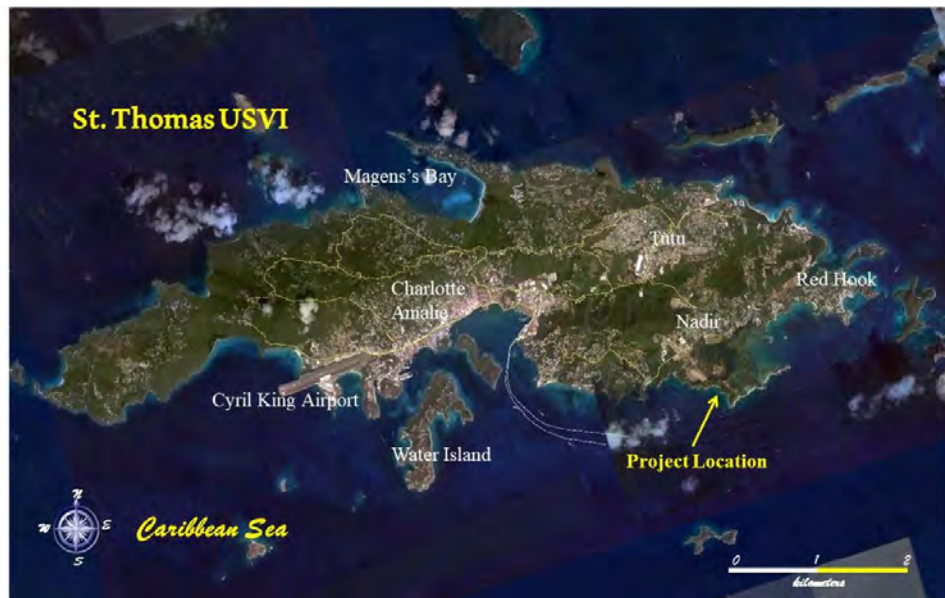


Figure 1. Location map with project location shown.



Figure 2. Map showing the location of the project site (yellow border) in relation to the Bovoni Landfill and Mangrove Lagoon Wastewater Treatment Plant.



Figure 3. The ecological survey area at 17 Remainder, Estate Bovoni. A survey was conducted across the site and seaward of the property approximately 100 m.



Figure 4. Survey routes and listening/viewing stations established during the study.

RESULTS AND DISCUSSION:

FLORA AND FAUNA SURVEY

The terrestrial habitats surveyed on the Bovoni 17 Remainder property included highly disturbed roadside vegetation, secondary dry scrubland, lowland dry forest and coastal thornbush. These habitat types occur on rapidly drained soils and on sites formally used for agriculture and/or grazing. Floristic diversity tends to be low in all of these habitat types, with generally low stature, a high density small trees, and a poorly developed herb layer. This is due to frequent drought conditions due to rapid runoff, low water storage in shallow soils, and high sunlight. Although there were general differences between habitat types, there was also considerable mixing of flora, and a very vague habitat delineation across the property. Below are the four vegetation groups with a general location on property for each and characteristic species shown.

Roadside Vegetation

The road running along the northwest side of the property divides it from the Bovoni landfill. The area is filled with a considerable amount of garbage and refuse, and the fenced shoulder is lined with opportunistic, sun and draught tolerant plants, primarily non-native species. Very fast growing exotic and invasive grasses, vines and small scrubs cover this zone. Catch and keep (*Acacia retusa*), Indian rubber vine (*Cryptostegia grandiflora*) and tan tan (*Leucaena leucocephala*) are dominant. Below are images of the vegetation found along the periphery of the Bovoni property.





Belly-ache bush
Jatropha gossypifolia



snake weed
Stachytarpheta jamaicensis



catch and keep
Acacia retusa



goatbush
Castela erecta



Indian rubber vine
Cryptostegia grandiflora



Egyptian sesban
Sesbania sesban



cats claw
Pithecellobium unguis-cati



American cotton
Gossypium barbadense



tan tan
Leucaena leucocephala



hogvine
Camonea umbellate



dodder
Cuscuta americana



false broom
Brachypodium sylvaticum



Burmuda grass
Cynodon dactylon



Guinea grass
Megathyrsus maximus

Secondary Dry Scrubland

Secondary dry scrubland covered the hill tops and crests on the Bovoni property. Secondary dry scrubland appears as a result of disturbance on dry forests and is characterized with very little leaf litter or soil remaining. Trees and scrubs generally do not exceed 8 m and are thorny. The herb layer is very poor or lacking. Many non-native or invasive species are present. Floristic diversity is extremely low. Plants very tolerant to low rainfall, drought and salt spray including legumes, cactus and bromeliads are common. The species indicative of this habitat found on the Bovoni property included tree cactus (*Pilosocereus lanuginosus*), jumbie pineapple (*Tillandsia utriculate*), tan tan (*Leucaena leucocephala*) and bromeliads (*Neoregelia spp.*). Below are common plants found in this habitat during the survey.



tree cactus
Pilosocereus lanuginosus



tan tan
Leucaena leucocephala



sea torchwood
Amyris elemifera



Turk's cap
Melacactus intortus



jumbie pineapple
Tillandsia utriculata



white frangipani
Plumeria alba



Bromeliads
Neoregelia spp.



fiddlewood
Citharexylum spinosum



Pigeon plum
Coccoloba diversifolia



century plant
Agave americana

Lowland dry forest

Lowland dry forests are characterized by low stature, high density small and medium sized trees with a high density of stems for draught tolerance, a single layer canopy and a poorly developed herb layer. Floristic diversity is low and species include both non-native and native species. In fragmented areas like the Bovoni property, which occurs away from large tracts of dry forest, diversity has undoubtedly been further lost with lack of seed dispersal. This habitat was found on the seaward facing slope of the property, where moisture and leaf litter was higher than on the hill crest, and less disturbance has been experienced. Dry deciduous trees dominated the zone. These included the tan tan (*Leucaena leucocephala*), gumbo limb (*Bursera simaruba*), water mampoo (*Pisonia subcordata*), tamerind (*Tamarindus indica*), and rattlebush (*Albizia lebbek*). Below are common species found in this habitat.





Gumbo limbo
Bursera simaruba



water mampoo
Pisonia subcordata



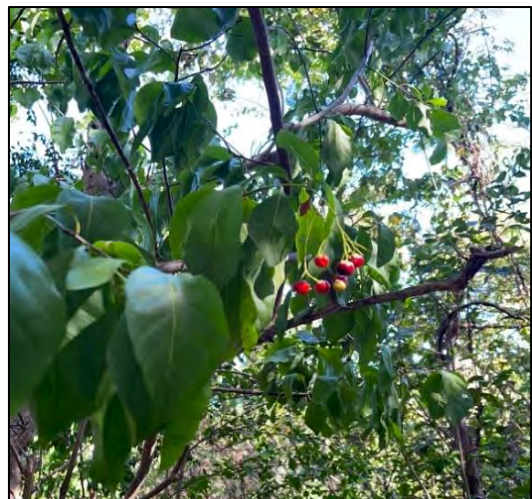
Tamerind
Tamarindus indica



Rattlebush
Albizia lebbek



wild frangipani
Plumeria alba



cherry
Bourreria succulenta



pinguin
Bromelia pinguin



arjuna
Terminalia arjuna



tropical almond
Terminalia catappa



neem
Azadirachta indica



Christmas bush
Comocladia dodonaea



coco-plum
Chrysobalanus icaco



yellow balsum
Croton flavens



yaupon holly
Ilex vomitoria



inkberry
Randia aculeata



cats claw
Pithecellobium unguis-cati



monk orchid
Oeceoclades maculate

Coastal plants

Along the coastline under the steep cliffs dropping to the sea, few plant species were found. All are salt water tolerant and resilient to high winds. These included some grasses, herbs and scrubs. The zone is dominated by buttonwood (*Conocarpus erectus*), sea grape (*Coccoloba uvifera*) and tropical crabgrass (*Digitaria ciliaris*).



Seagrape
Coccoloba uvifera



Turk's cap
Melocactus intortus



Buttonwood
Conocarpus erectus



Guinea grass
Megathyrsus maximus

Table 1. lists all plants identified during the survey. Over 80 species in 35 families were identified, and several others were found but unidentifiable without seeds or flowers present. Many species were indicative of dry forests, scrubland, or disturbed areas of the US Virgin Islands, however some species occur in both moist and dry forest conditions. There was a mix of native, naturalized, exotic, and invasive species on the property.

Table 2. lists the vertebrate animals encountered during the survey. Several bird species were detected on Merlin but were not visually identified. One deer white tail deer (*Odocoileus virginianus*) was observed on the property (Figure 6), and several deer trails and footprints were found. Native anoles and lizards were seen on tree branches, trunks and leaves (Figure 6), and both mongoose and green iguanas were observed scampering across the boundary roads. Assorted spiders, moths, butterflies, bees and beetles were found. The high number of flowering trees, annuals and perennials

appeared to support many insects and hummingbirds. Termite nests were found in the larger trees and spiders webs hug webs across shrubs and grasses..

Table 1. A list of plant species observed during floral surveys from January 23 to February 11, 2024 at the proposed solar field development at Bovoni 17 Remainder, St. Thomas USVI.

Order	Family	Species	Common Name	Comments	
Asparagales	Asparagaceae	<i>Agave americana</i>	century plant	naturalized	
	Orchidaceae	<i>Encyclia spp</i>	orchids	native	
		<i>Oeceoclades maculata</i>	monk orchid	naturalized	
Poales	Poaceae	<i>Megathyrsus maximus</i>	Guinea grass	invasive	
		<i>Sporobolus virginicus</i>	marsh grass	native	
		<i>Brachypodium sylvaticum</i>	false broom grass	non-native	
		<i>Digitaria ciliaris</i>	Tropical crab grass	invasive	
		<i>Cynodon dactylon</i>	Burmuda grass	non-native	
	Bromilliceae	<i>Tillandsia utriculata</i>	jumbie pineapple	native	
		<i>Bromilia pinguin</i>	pinguin	native	
		<i>Neoregelia spp.</i>	bromeliad species		
	Malvales	Malvaceae	<i>Thespecia populnea</i>	beach maho	naturalized
			<i>Gossypium barbadense</i>	American cotton	non-native
<i>Corchorus hirsutus</i>			jack switch	native	
<i>Guazuma ulmiflora</i>			West Indian elm	native	
<i>Wissadula hernandioides</i>			yellow velvetleaf	native	
<i>Abutilon indicum</i>			Indian abutilon	native	
Geraniales	Rutaceae	<i>Amyris elemenfera</i>	sea torchwood	native	
		<i>Triphasia trifolia</i>	sweet lime	native	
		<i>Guettarda krugii</i>	frogwood	native	
		<i>Amyris elemifera</i>	sea amyris		
	Meliaceae	<i>Azadirachta indica</i>	neem	native	
Rhoeadales	Caparaceae	<i>Capparis cynophallophora</i>	Jamaican caper	native	
		<i>Capparis flexuosa</i>	dog caper	native	
Caryophyllales	Caryophylladeae	<i>Pisonia subcordata</i>	water mampoo	native	
	Petiveriaceae	<i>Rivina humilis</i>	pigeonberry	non-native	
		<i>Trichostima ochtandrum</i>	hoop vine	native	
	Amaryllidaceae	<i>Hymenocallis caribbaea</i>	white lily	native	
	Polygonaceae	<i>Coccoloba uvifere</i>	sea grape	native	
		<i>Coccoloba diversifolia</i>	pigeon plum	native	
Malpighiales	Euphorbiaceae	<i>Hippomane mancinella</i>	manchineel	native	
		<i>Tragia volubilis</i>	stinging vine	native	
		<i>Jatopha gossypifolia</i>	bellyache bush	native	
		<i>Gymanthes lucida</i>	shiney oysterwood		
		<i>Casearia guianensis</i>	wild coffee	native	
	Salacaceae	<i>Byrsonima lucida</i>	locustberry	native	
	Malpighiaceae	<i>Croton flavens</i>	yellow balsum	native	
		<i>Croton astroites</i>	wild marang	native	

Table 1 cont. A list of plant species observed during floral surveys from January 23 to February 11, 2024 at the proposed solar field development at Bovoni 17 Remainder, St. Thomas USVI.

Order	Family	Species	Common Name	Comments
	Chrysobalanaceae	<i>Chrysobalanus icaco</i>	Coco-plum	native
Gentianles	Apocynaceae	<i>Plumeria alba</i>	white frangipani	native
		<i>Cryptostegia grandiflora</i>	Indian rubber vine	naturalized
	Rubiaceae	<i>Exostema caribaeum</i>	princewood	native
		<i>Randia aculeata</i>	inkberry	native
Solanales	Camoneae	<i>Camonea umbellata</i>	hogvine	non-native
	Cuscutaeae	<i>Cuscuta americana</i>	dodder	invasive
Rosales	Fabaceae	<i>Sesbania sesban</i>	Egyptian susban	non-native
		<i>Albizia lebeck</i>	rattle bush	naturalized
		<i>Leucaena leucocephala</i>	tan tan	invasive
		<i>Acacia retusa</i>	catch and keep	non-native
		<i>Acacia farnisiana</i>	sweet acacia	invasive
		<i>Acacia tortuosa</i>	cashia	native
		<i>Piscidia piscipula</i>	Jamaican dogwood	native
		<i>Haematoxylum campechannum</i>	longwood cashia	naturalized
		<i>Pithecellobium unguis-cati</i>	cats claw	native
		<i>Tamarindus indica</i>	tamarind	naturalized
Myrtales	Combretaceae	<i>Conocarpus erectus</i>	buttonwood	native
		<i>Bucida bucerus</i>	gree gree	naturalized
		<i>Terminalia catappa</i>	tropical almond	native
		<i>Terminalia arjuna</i>	arjun	native
	Myrtaceae	<i>Eugenia axillaris</i>	white stopper	
Cactales	Cactaceae	<i>Melocactus intortus</i>	Turk's cap	native
		<i>Pilosocereus lanuginosus</i>	tree cactus	native
Celastrales	<u>Aquifoliaceae</u>	<i>Ilex vomitoria</i>	yaupon holly	non-native
Sapindales	Burseraceae	<i>Bursera simaruba</i>	gumbo limbo	native
	Anacardiaceae	<i>Comocladia dodonaea</i>	Christmas bush	native
	Simaroubaceae	<i>Castela erecta</i>	goat bush	non-native
	Sapindaceae	<i>Meliococcus bijugatus</i>	genip	naturalized
Lamiales	Boraginaceae	<i>Cordia sulcata</i>	white manjack	native
		<i>Cordia dichotoma</i>	fragrant manjack	native
		<i>Bourreria succulenta</i>	cherry	native
	Bignoniaceae	<i>Tecoma stans</i>	Ginger Thomas	naturalized
		<i>Dolichandra unguis-cati</i>	cats eye creeper	native
	Verbenaceae	<i>Stachytarpheta jamaicensis</i>	snake weed	native
		<i>Citharexylum spinosum</i>	fiddlewood	native
		<i>Lantana involucrata</i>	wild sage	native
Commelinales	Commelinaceae	<i>Commelina erecta</i>	widow's tears	native
Boraginales	Boraginaceae	<i>Bourreria succulenta</i>	Bahama strongbark	native

Table 2. A list of animal species observed during surveys from January 23 to February 11, 2024 at the proposed solar field development at Bovoni 17 Remainder, St. Thomas USVI.

Class	Family	Species	Common Name	Comments
Mammalia	Cervidae	<i>Odocoileus virginianus</i>	whitetail deer	introduced, 1950's
	Herpestidae.	<i>Urva auropunctata</i>	small Indian mongoose	introduced 1970's
Aves	Trochilidae	<i>Orthorhyncus cristatus</i>	crested hummingbird	year round common
	Falconidae	<i>Falco sparverius</i>	American kestrel	year round, rare
	Emberizidae	<i>Coereba flaveola</i>	bananaquit	year round, common
	Tyrannidae	<i>Tyrannus dominicensis</i>	grey kingbird	year round, common
	Columbidae	<i>Columbina passerina</i>	ground dove	common
		<i>Passer domesticus</i>	house sparrow	naturalized
		<i>Setophaga petechia</i>	yellow warbler	
		<i>Gallus gallus</i>	domesticated chicken	
Reptilia	Iguanidae	<i>Iguana iguana</i>	green iguana	naturalized
	Dactyloidae	<i>Anolis cristatellus</i>	crested anole	native, occasional
		<i>Anolis stratulus</i>	banded anole	native, occasional
		<i>Anolis pulchellus</i>	Puerta Rico anole	Native, occasional



banded anole
Anolis stratulus



crested anole
Anolis cristatellus



St. Croix ground lizard
Pholidoscelis polops



white tail deer
Odocoileus virginianus

Figure 5. Animals encountered on the Bovoni 17 Remaining property. Native anoles and lizards as well as the naturalized whitetail deer (*Odocoileus virginianus*). Many deer tracks were found on the property.

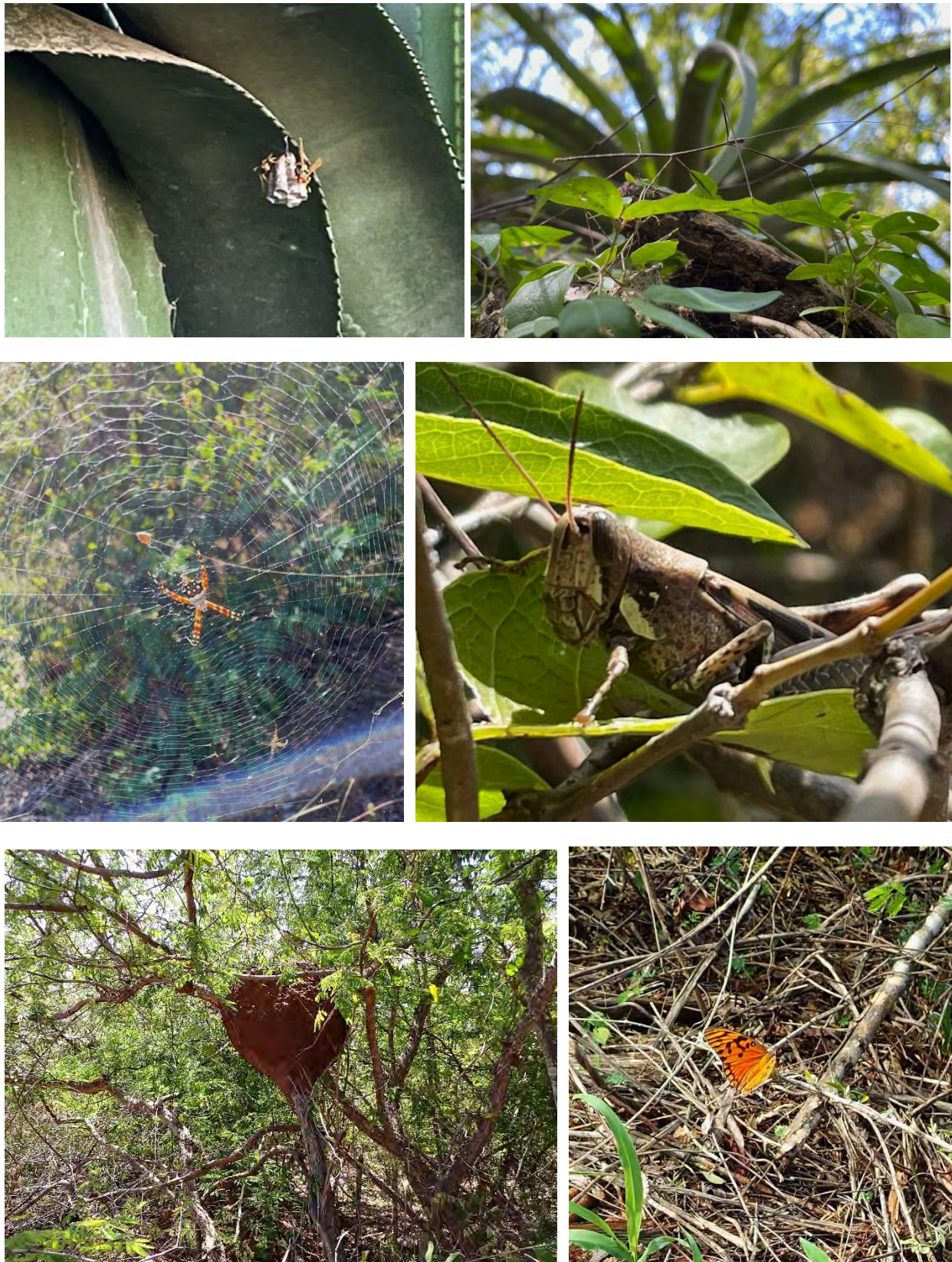


Figure 6. Nests and insects encountered during the survey on the Bovoni 17 Remaining property.

MARINE BENTHIC SURVEY

Stalley Bay, St. Thomas USVI

The shoreline bordering the southwest edge of the Bovoni property is rugged and steep, with narrow beaches between rocky points. Beaches are made up of worn pebbles, various sized rocks and boulders, and small patches of coarse, brown sand (Figure 7). The shoreline immerses into a similar underwater benthic habitat of terrigenous rocks, pebbles and boulders, with occasional small patches and channels of coarse unconsolidated light sand (Figure 8). This benthic habitat type extends across the survey area along the coast, and out beyond the 100 m boundary, dropping in depth from 0 to 15 feet. Offshore of the rocky points defining the small bays along the coastline, large boulders are either emergent or lay slightly below the surface of the water (Figures 9). These boulders and rocks grow a variety of turf, macro and calcareous algae (Table 3, Figures 10), which provides food and habitat for macro-invertebrates and fishes. Schools of herbaceous fishes, as well as various sea urchins and other macro-invertebrates were found grazing on the site (Figures 11 and 12). Wrasses and small damselfish darted around the shallow rocks and crevices.

The benthos surveyed in and around Stalley Bay constituted only one habitat type. This was the rocky, macro-algae dominated ecosystem described. Consolidated limestone reef was absent. A few small opportunistic coral species colonized the terrigenous hardbottom (Table 5, Figure 13) but density was low of these species. Sponges and gorgonian corals were also observed at low densities. In the center of the bay, slightly beyond the survey area, small patches of native manatee grass (*Syringodium filiforme*) mixed with turtle grass (*Thalassa testudinum*) and marine algae were observed (Figure 14). These supported milk conch (*Macrostrombus costatus*) and bar jacks (*Caranx ruber*) searching for food in the seagrass habitat.

On the rocky points defining the edges of the bay, numerous colonies of staghorn coral (*Acropora palmata*) were found colonizing the rocks and boulders (Figure 15). Over 56 colonies were counted within the survey area, both fragments and large, established colonies. There was evidence of some disease and recent mortality on the Acroporids off the point in the western end of the survey area. Three colonies of fused elkhorn coral (*A. prolifera*) were also found on the eastern point. The areas of high density fused staghorn and elkhorn are shown in Figure 16.



Figure 7. The rocky coastline along the proposed development site is covered in terrigenous rocks of various sizes, worn pebbles, and sparse areas of sand.



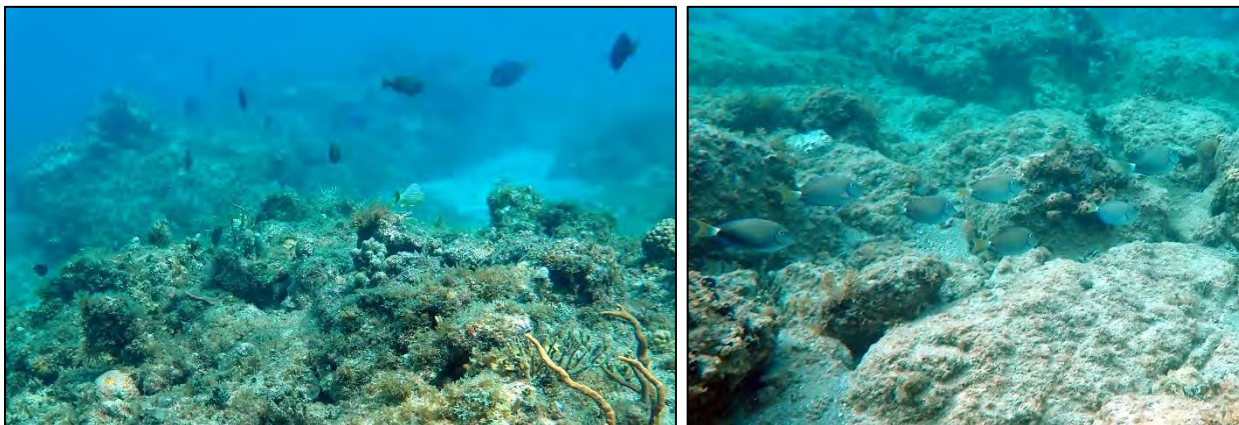
Figure 8. The underwater benthos is covered in terrigenous rocks and boulders, with occasional patches of coarse, light sand.



Figure 9. Emergent and barely submerged rocks and boulders define the outer edges of the small bays surveyed.



Figures 10. A variety of macro-algae cover the rocks and boulders. The brown algae *Sargassum spp.*, *Turbinaria turbinata* and *Dictyota spp.* grow in thick mats over much of the site.



Figures 11. Herbaceous fishes like blue tang (*Acanthurus coeruleus*) and ocean surgeonfish (*A. bahianus*) grazed the algae covered rocks and boulders.



Figure 12. Rock boring sea urchins (*Echinometra lucunter*), West Indian top shell (*Cittarium pica*) and West Indian sea eggs (*Tripneustes ventricosus*) grazed on the turf and calcareous algae growing on the rocks and boulders.

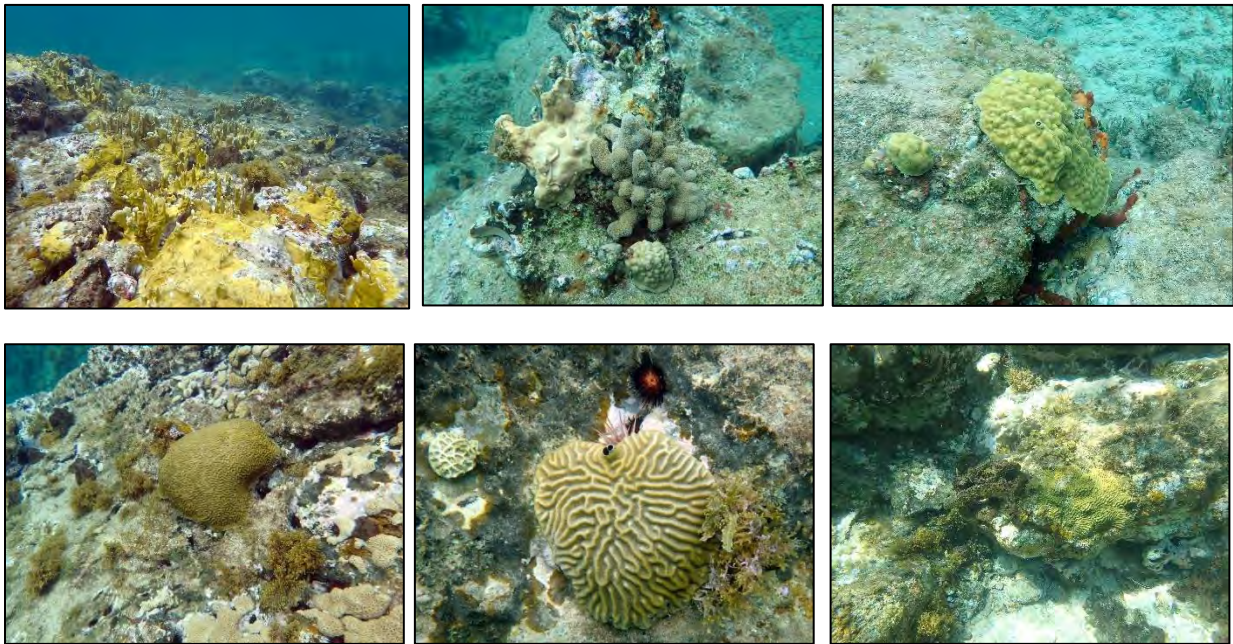


Figure 13. Fire coral (*Milipora spp.*) and small opportunistic stony corals like finger coral (*Porites porites*) and mustard hill coral (*P. asteroides*) colonized the site. A small number of brain coral colonies (*Pseudodiploria strigosa* and *P. clivosa*) were observed colonizing the terrigenous boulders. Most corals were at very low densities.



Figure 14. A small grass bed offshore of the survey area supported small fish and larger predatory jacks (*Caranx ruber*)



Figures 15. Elkhorn (*Acropora palmata*) and fused staghorn (*A. prolifera*) corals were found on the rocky outcroppings at both the east and west side of the survey area. Colonies were found at many sizes and both healthy and diseased/recently dead were observed.



Figure 16. Areas of elkhorn coral (*A. palmata*) colonization. Stars represent where 5 or more colonies were found.

Table 3-6 list the plants and animals recorded during the survey off the Bovoni proposed project site. Although with the exception of staghorn, coral was nearly absent on the site, over 30 macro-invertebrates and 55 fish species were recorded, including one nurse shark (*Ginglymostoma cirratum*) and one red lionfish (*Pterios volitans*). Most of the fish encountered were small species like wrasses and damselfish, or larger fish in juvenile stage. This is as would be expected in the shallow nearshore water. Species of commercial value found included juvenile Caribbean spiny lobsters (*Panulirus argus*), West Indian top shell (whelks, *Cittarium pica*), juvenile yellowtail snapper (*Ocyurus chrysurus*), and several grunt, jack and parrotfish species. One green turtle was observed moving rapidly through the survey area.

Table 3. Marine algae observed during a three hour survey in Stalley Bay on February 4, 2024.

Phylum	Family	Species	Common Name
Chlorophyta green algae	Caulerpaceae	<i>Caulerpa mexicana</i>	green grape alga sp.
		<i>Caulerpa racemosa</i>	green grape alga sp.
	Dasycladaceae	<i>Caulerpa sertularioides</i>	green feather alga
		<i>Caulerpa taxifolia</i>	
		<i>Neomeris annulata</i>	fuzzy tip alga
	Halimedaceae	<i>Halimeda tuna</i>	
		<i>Halimeda discoidea</i>	watercress alga
		<i>Halimeda opuntia</i>	
	Udoteaceae	<i>Penicillus pyriformis</i>	
		<i>Udotea occidentalis</i>	mermaids fan sp.
		<i>Udotea flabellum</i>	mermaids fan sp.
Phaeophyta brown algae	Dictyotaceae	<i>Ventricaria ventricosa</i>	sea pearl
		<i>Dictyota caribaea</i>	y branched alga sp.
		<i>Dictyota divaricata</i>	y branched alga sp.
		<i>Dictyopteris delicatula</i>	
		<i>Padina spp.</i>	leafy rolled-blade alga
		<i>Turbinaria turbinata</i>	
Rhodophyta red algae	Galaxauraceae	<i>Sargassum hystrix</i>	sargassum seaweed
		<i>Galaxaura oblongata</i>	tubular thicket alga
	Rhodomelaceae	<i>Galaxaura rugosa</i>	tubular thicket alga
		<i>Wrightiella blodgettii</i>	
	Corallinaceae	<i>Jania adherens</i>	pink segmented alga
Cyanophyta	Oscillatoriaceae	<i>Schizothrix calcicola</i>	red filamentous alga
Tracheophyta sea grass	<u>Cymodoceaceae</u>	<i>Syringodium filiforme</i>	manatee sea grass
		<i>Thalassia testudinum</i>	turtle grass

Table 4. Stony corals observed during a three hour survey in Stalley Bay on February 4, 2024.

Family	Species	Common Name	Endangered
Acroporidae	<i>Acropora prolifera</i>	fused staghorn coral	*
	<i>Acropora palmata</i>	elkhorn coral	*
Agariciidae	<i>Agaricea agaricites</i>	lettuce coral	
Faviidae	<i>Favia fragum</i>	golfball coral	
	<i>Orbicella faveolata</i>	boulder star coral	*
	<i>Pseudodiplora strigosa</i>	symmetrical brain coral	
	<i>Pseudodiplora clivosa</i>	knobby brain coral	
Poritidae	<i>Porites asteroides</i>	mustard hill coral	
	<i>Porites porites</i>	finger coral	
Milleporidae	<i>Millepora alcicornis</i>	branching fire coral	
	<i>Millepora complanata</i>	blade fire coral	
Siderastreidae	<i>Siderastrea siderea</i>	starlet coral	
	<i>Siderastrea radians</i>	lesser starlet coral	

Table 5. Marine macro-invertebrates observed during a three hour survey in Stalley Bay on February 4, 2024.

Phylum	Species	Common Name
Annelida	<i>Spirobranchus giganteus</i>	Christmas tree worm
	<i>Anamobaea orstedii</i>	split crown feather duster worm
	<i>Bispira brunnea</i>	social feather duster worm
Arthropoda	<i>Periclimenes pedersoni</i>	pederson shrimp
	<i>Panulirus argus</i>	Caribbean spiny lobster
	<i>Stenocionops furcatus</i>	furcate spider crab
Cnidaria	<i>Bartholomea annulata</i>	corkscrew anemone
	<i>Condylactis gigantea</i>	giant anemone
Echinodermata	<i>Ophiocoma echinata</i>	blunt-spined brittle star
	<i>Triptneustes ventricosus</i>	West Indian sea egg
	<i>Diadema antillarum</i>	long-spined urchin
	<i>Eucidaris tribuloides</i>	pencil urchin
	<i>Echinometra lucunter</i>	rock boring urchin
Porifera	<i>Amphimedon compressa</i>	erect rope sponge
	<i>Ircinia strobilina</i>	black-ball sponge
	<i>Holopsamma helwigi</i>	lumpy overgrowing sponge
	<i>Pseudosquilla ciliate</i>	ciliated false squilla
Mollusca	<i>Macrostrombus costatus</i>	milk conch
	<i>Lithopoma tectum</i>	West Indian starsnail
	<i>Cerithium litteratum</i>	stocky cerith
	<i>Chicoreus brevisfrons</i>	West Indian murex
	<i>Cittarium pica</i>	West Indian top shell

Table 6. Fish observed during a three hour survey in Stalley Bay on February 4, 2024.

Family	Species	Common Name	Relative abundance
Acanthuridae	<i>Acanthurus coeruleus</i>	blue tang	common
	<i>Acanthurus bahianus</i>	ocean surgeonfish	common
	<i>Acanthurus chirugus</i>	doctorfish	common
Belonidae	<i>Ablennes hians</i>	flat needlefish	rare
Blennidae	<i>Ophioblennius macclurei</i>	redlip blenny	rare
	<i>Malacoctenus triangulatus</i>	saddled blenny	common
	<i>Malacoctenus macropus</i>	rosy blenny	rare
Carangidae	<i>Caranx ruber</i>	bar jack	common
	<i>Caranx bartholomew</i>	yellow jack	common
Gerreidae	<i>Gerres cinereus</i>	yellowfin mojarra	common
Grammatidae	<i>Gramma loreto</i>	fairy basslet	common
Gobiidae	<i>Coryphopterus hyalinus</i>	glass goby	very common
Haemulon	<i>Haemulon flavolineatum</i>	French grunt	common
	<i>Haemulon aurolineatum</i>	tomtate	occasional
	<i>Haemulon sciurus</i>	stripped grunt	rare
Holocentridae	<i>Holocentrus adscensionis</i>	squirrelfish	occasional
	<i>Holocentrus rufus</i>	longspine squirrelfish	occasional
	<i>Myripristis jacobus</i>	blackbar soldierfish	occasional
Labridae	<i>Halichoeres radiatus</i>	puddingwife	occasional
	<i>Halichoeres bivittatus</i>	slippery dick	common
	<i>Halichoeres garnoti</i>	yellowhead wrasse	common
	<i>Halichoeres maculapinnae</i>	clown wrasse	common
	<i>Thalasoma bifasciatum</i>	bluehead wrasse	common
Lutjanidae	<i>Lutjanus apodus</i>	schoolmaster snapper	rare
	<i>Lutjanus synagris</i>	lane snapper	rare
	<i>Ocyurus chrysurus</i>	yellowtail snapper	occasional
Mullidae	<i>Mulloidichthys martinicus</i>	yellow goatfish	occasional
	<i>Pseudopeneus maculatus</i>	spotted goatfish	occasional
Pomocentridae	<i>Stegastes partitus</i>	bicolor damselfish	common
	<i>Stegastes leucostictus</i>	beaugregory	common
	<i>Stegastes adustus</i>	dusky damselfish	common
	<i>Stegastes variabilis</i>	cocoa damselfish	common
	<i>Stegastes planifrons</i>	3-spot damselfish	common
	<i>Abudefduf saxatilis</i>	sergeant major	common

Table 6 cont. Fish observed during a three hour survey in Stalley Bay on February 4, 2024

Family	Species	Common Name	Number
Scaridae	<i>Sparisoma viride</i>	stoplight parrotfish	occasional
	<i>Sparisoma aurofrenatum</i>	redband parrotfish	occasional
	<i>Sparisoma chrysopteron</i>	redtail parrotfish	occasional
	<i>Sparisoma rubripinnae</i>	yellowtail parrotfish	occasional
	<i>Sparisoma radians</i>	bucktooth parrotfish	common
	<i>Scarus iserti</i>	striped parrotfish	common
	<i>Scarus vetula</i>	queen parrotfish	occasional
	<i>Scarus taeniopterus</i>	princess parrotfish	
Scorpaenidae	<i>Pterios volitans</i>	red lionfish	one
Serranidae	<i>Hypoplectrus nigricans</i>	black hamlet	rare
	<i>Hypoplectrus unicolor</i>	butter hamlet	rare
	<i>Hypoplectrus puella</i>	barred hamlet	rare
	<i>Serranus tigrinus</i>	harlequin bass	rare
	<i>Serranus tabacarius</i>	tobaccofish	rare
	<i>Cephalopholis cruentatus</i>	graysby	rare
Sphyreanidae	<i>Sphyrna barracuda</i>	great barracuda	one
Tetraodontidae	<i>Canthigaster rostrata</i>	sharpnose puffer	occasional
	<i>Diodon hystrix</i>	porcupinefish	rare
	<i>Sphoeroides testudineus</i>	checkered puffer	one
Chondrichthyes			
<u>Ginglymostomatidae</u>	<i>Ginglymostoma cirratum</i>	nurse shark	one

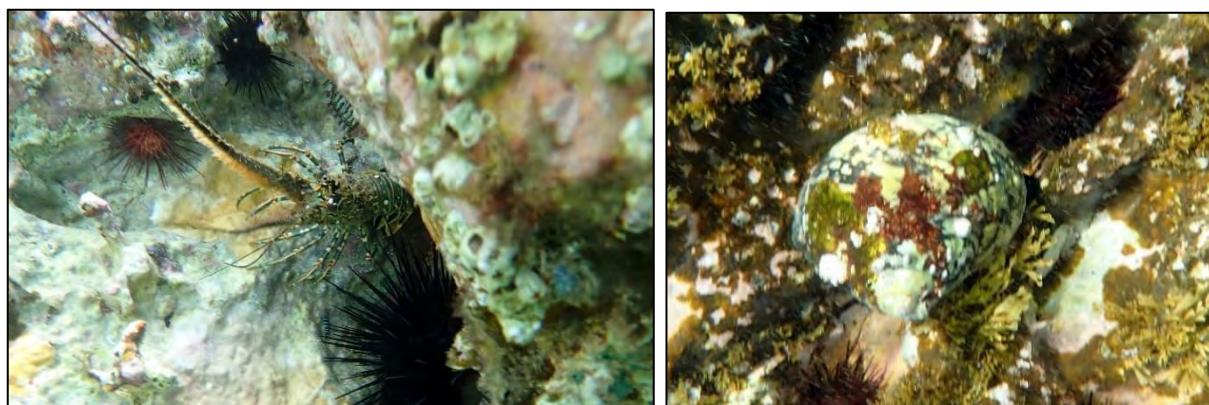


Figure 17. A variety of macro-invertebrates were found in Stalley Bay. Commercially important species included the Caribbean spiny lobster (*Panularius argus*) and West Indian top shell (*Cittarium pica*).



Figure 18. A wide variety of fishes were found in Stalley bay off the proposed development site. Most were small wrasses and damselfish species but snapper, grunts, parrotfish and jacks were also fairly abundant in deeper water under and around rocks and ledges.

PROTECTED SPECIES

Federally protected tree boas (*Chilabothrus granti*) were not found on the Bovoni property site however the conditions found there fall well within their habitat preference (i.e. rocky shallow soil with dense dry vegetation), and the area is within their distribution range. Since they are largely nocturnal, there is a reasonable chance that they inhabit the property but were not detected during daytime surveys.

Federally protected elkhorn and staghorn (*Acropora spp.*), coral colonies were present within the study area, colonizing the rocky bottom and boulders seaward of the coastal points of land. One star coral (*Orbicella faveolata*), also federally protected, was found within the survey area. All other coral species found within Stalley Bay were opportunistic corals or brain corals growing on the submerged rocky substrate. Manatee and turtle grass was present outside of the survey area but was very sparse inside the bay. One green sea turtle (*Chelonia mydas*) was observed. Hawksbill turtles were not seen.



SIGNIFICANCE OF RESULTS and RECOMMENDATIONS

Although the property at Bovoni 17 Remainer is a garbage strewn, ecologically fragmented, highly disturbed property with harsh environmental conditions, little remaining topsoil, seasonal draught, and exposure to regular heavy winds and salt spray, it retains plant and animal species that are native to dry forests of the US Virgin Islands and exist in an apparently resilient cycle of life. Destruction of the natural communities and attributes of the property for the solar farm development should not be taken lightly, but instead with respect and with the aim of conserving the natural resources that can be conserved. In particular, care should be taken to protect the endangered species including the tree boa if present, and the *Acropora* corals in Stalley Bay.

- Best conservation practices should be employed when clearing and developing the site. Tree boas should be closely watched for by equipment operators, surveyors and all workers, and DPNR should be notified if one is seen so that it can be removed and relocated.
- Sediment control with the use of silt curtains along the steep hillside is recommended. Immediate grass planting or the use of soil covering material is highly recommended to prevent runoff and sedimentation of Stalley Bay.



Attachment E – Archeological Study



**PHASE I (A&B) ARCHAEOLOGICAL SURVEY
30.5 ACRES, PARCEL 17 REM.
ESTATE BOVONI, ST. THOMAS
US VIRGIN ISLANDS**

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May 13, 2024

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Figure 11:	Segment of the 1839 Hornebeck map depicting the location of the subject property (red arrow). Source map: www5.kb.dk/maps/kortsa/2012/jul/kortatlas/object65501/da/	11

1.0 INTRODUCTION

CocoSol International Inc. (CocoSol) performed a Phase I (A&B) Cultural Resources Survey (Survey) for approximately 30.5 acres of land located on 17 Rem., Estate Bovoni, St. Thomas, U.S Virgin Islands (Figures 1 and 2). The Survey was performed on behalf of Quantum Solar LLC of St. John, USVI.



Figure 1: Google Earth image depicting the location of the survey area.

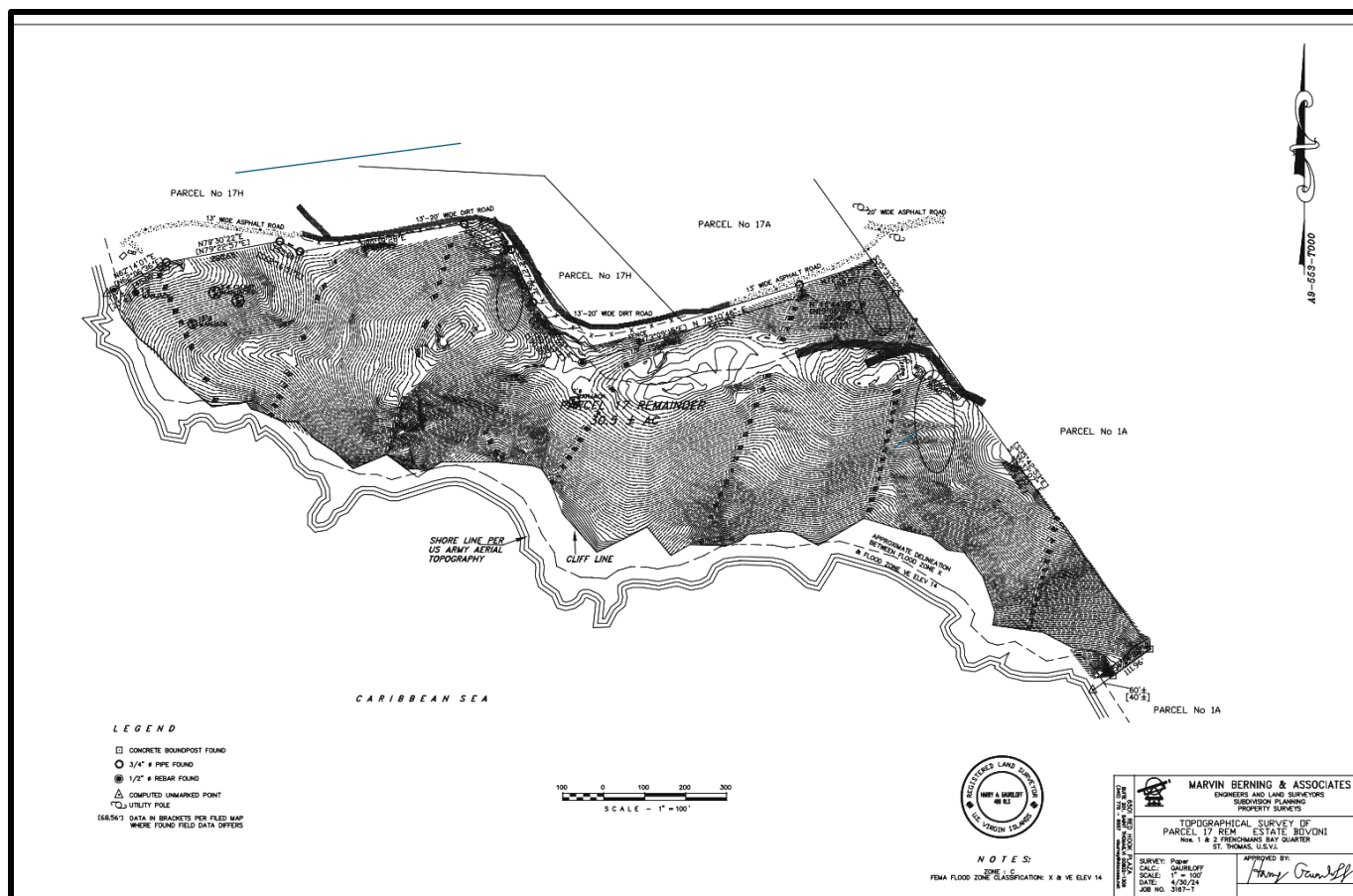


Figure 2: Topographic map of 17 Rem., Estate Bovoni

1.1 Proposed Project

Quantum proposes to construct a solar photovoltaic panel array on the subject property as shown in Figure 3. The installation of the panels will include the clearing of the land by mulching, access road construction, and other limited earth change activities. The panels frames will be anchored with screws to depths of approximately 2.5 meters below the existing ground surface.

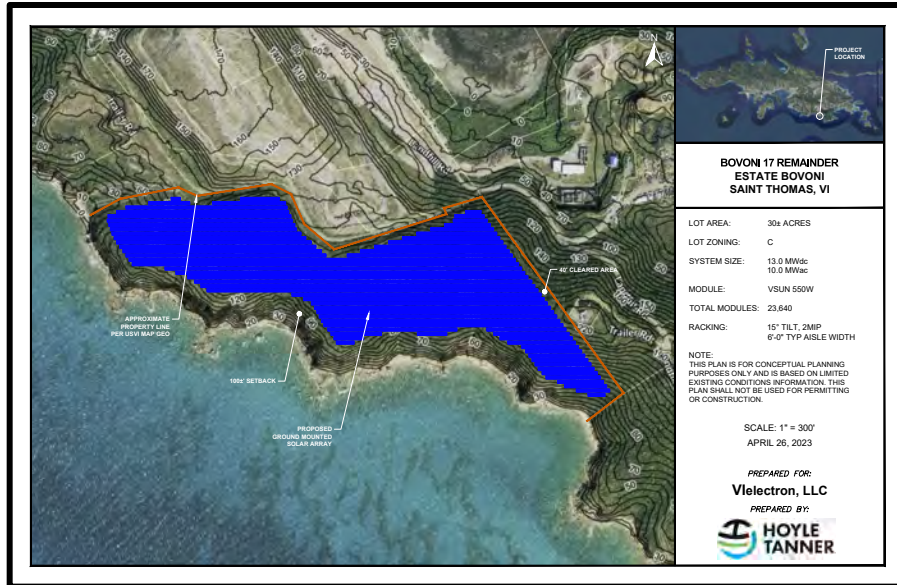


Figure 3: Map depicting the proposed solar panel array.

1.2 Regulatory Framework

Because of the earth change activities required to develop the subject property, the project is required to comply with Title 29, Chapter 17, Section 959, of the Virgin Islands Code, also known as the Virgin Islands Antiquities and Cultural Properties Act. Because of federal permitting for the project, it is also required to comply with Section 106 of the National Historic Preservation Act of 1966, as amended.

1.3 Environmental Setting

The subject property is in the southeastern part of St. Thomas on a peninsula overlooking the Caribbean Sea. The topography of the subject property consists of a narrow ridge top with steeply sloping side slopes ranging from 40 to 90 percent slope gradient. Three knolls (Figure 2) are the highest elevations of the ridge, these are narrow and less sloping, the center knoll is the less sloping area of the subject property, the highest elevation is on the eastern knoll. The vegetation consists of secondary growth of pioneer species such as tan-tan, caccia, various bromeliads and cacti. Figures 4 and 5 depict the site conditions described above.

An abandoned, and until recently overgrown road, was identified in the northeast part of the ridge. The road was cut on the ridge shoulder (Figure 2). Barbed wire was observed throughout the property, indicating that the subject property was used to graze cattle.

The soil on the subject property is defined by the United States Department of Agriculture: National Resource Conservation Service as belonging to the Southgate-Rock complex (SRE, SRF, and SRG). These soils are characterized as containing thin (< 15 centimeters) gravelly to very gravelly loam topsoil that are underlain by weathered rock. The existing conditions found throughout the subject property indicate that extensive erosion has deflated the soil column leaving exposed on surface very gravelly loam or the weathered rock, Figures 6 to 8 provide the soil map for the subject property and the ground surface and soil characteristics.



Figure 4: Photograph depicting the vegetation and immediate environment of the subject property, view to the southeast.



Figure 5: Photograph of the characteristic northwestern slopes of the subject property

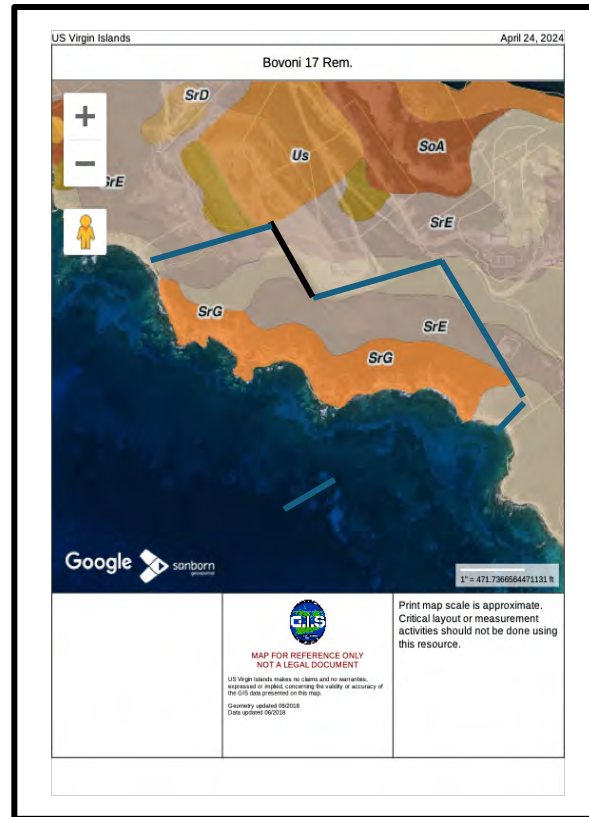


Figure 6: NRCS soil map depicting the extent and location of the Southgate-Rock complex. Source: <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>



Figure 7: Photograph of the summit of the eastern most knoll



Figure 8: Photograph of characteristic ground surface contexts with exposed gravelly loam.

2.0 SURVEY METHODS

The methods employed during the Survey are presented below.

2.1 Literature and Records Review

The literature and records review include the following:

- Review of the archaeological site files through consultation with the VISHPO
- Review of historic and modern cartographic sources
- Review of readily available published and unpublished literature

The findings obtained during the literature and records search are presented in Section 3.0 of this report.

2.2 Field Survey

The less steep and narrow lands of the ridge summit were shovel tested along a single transect established along the spine of the ridge with shovel tests performed at 30-meter intervals, where soil was present. The shovel tests measured approximately 30 centimeters in diameter and were excavated to depths no longer considered to have the potential of containing non-random artifact bearing matrices.

Generally, the shovel tests were extended to between 4 and 10 centimeters below ground surface, the depths at which the artifactually sterile, weathered rock substrata were encountered. The soil from each shovel test was screened through ¼ inch hardware cloth to recover artifacts, if any.

As the survey team walked from test location to the next, careful observation of the ground surface was made to identify cultural materials in surface contexts, if any. Figures 9 and 10 depict the field survey activities and an example shovel test.



Figure 9: Photograph of typical survey transect



Figure 10: Photograph of example shovel test depicting the thin gravelly loam that is underlain by weathered rock

3.0 FINDINGS

The findings for the literature and records search, and field survey are presented below.

3.1 Literature and Records Search

The literature and records review performed did not identify potentially significant cultural resources within the survey areas. The VISHPO informed us that no cultural resources of record were listed in the archaeological site files or the VI Registry for the subject property. The VISHPO did provide information for archaeological studies and sites of record for the Bovoni Peninsula. The information provided by the VISHPO includes multiple sites to the northwest of the subject property that include the Bovoni plantation settlement, a lime kiln, a cemetery, and an indigo works.

Several colonial sites have been identified in the vicinity but are outside of the subject property. David Knight performed a reconnaissance survey of 66 acres on Plots 18-I, 18-J, 18-K and 18-M (2006) and identified several constructed colonial features and scatters of historic artifacts. Knight did not encounter pre-colonial materials, though it should be noted that he did not perform subsurface testing.

Ms. Kourtney Donohue performed a Phase I Archaeological Survey for Plots 16 and 17E (2015) during which she identified the remains of the Bovoni Plantation site that was dedicated to cotton and sugar cane-based agriculture, with production from the late 18th to the approximate mid 19th century. Donohue recommended a Phase II Archaeological Testing and Evaluation Study to assess whether the site met criteria of eligibility to the National Register of Historic Places (NRHP). Subsequently, the University of Alabama performed the Phase II study and determined that the archaeological contexts did not meet criteria of eligibility to the NRHP because of extensive disturbances to the site and as such, the site lacked contextual integrity, although preservation of the remains of constructed features was recommended.

3.1.1 Precolonial Cultural Setting

The U.S. Virgin Islands (USVI) contains a rich milieu of cultural resources that offer testimony to over three thousand years of human experience. These cultural resources range from habitation sites established during the Archaic Period at Krum Bay and the Magens Bay Arboretum Complex on St. Thomas approximately three thousand years ago, to the multiple village and farmstead sites on all the islands, to chiefly ceremonial centers such as the Salt River Site on St. Croix, which is the site of the first encounter between the Taino and Europeans.

After the Archaic Period, the indigenous people of the Virgin Islands participated in a geographically vast network of social and economic relationships as evidenced by shared stylistic attributes of ceramics from the Saladoid, Ostionan and Chican culture periods across a significant part of the Antilles. Shared cosmological ideas are also evidenced by the presence of cemís and other religious paraphernalia in the Virgin Islands and across large areas of the Caribbean Archipelago.

Recent archaeological research indicates that the insular landscapes were dotted with small and large villages along the coastal section fringes of the islands as well as the uplands. Additionally, small settlements herein characterized as farmsteads are now being discovered in the uplands. These small upland farmsteads have mostly been unrecognized in the archaeological record; however, recent archaeological surveys for large development projects have resulted in the identification of such sites.

Long distance trade is evidenced by the presence of jadeite artifacts manufactured from raw lithic sources found in Central America and chert from Puerto Rico and down island. A whole host of cultigens with origins in the continent became part of the quotidian diet; more exotic items such as guinea pig, an Andean

domesticate, have been found in Puerto Rico and are likely be documented by future archaeological studies as also present in Virgin Island archaeological contexts.

3.1.2 Colonial Cultural Setting

Following the brief European incursion on St. Croix in 1493, the islands became the possession of several European nations including Spain, England, Malta, the Netherlands, and France. The colonies that these nations attempted to establish largely failed. Not until Denmark's Danish West Indies Company settled in St. Thomas in 1672 and on St. John in 1694, did these colonies become viable enterprises. The Danes purchased St. Croix from the French in 1733 and the island, with its larger size, gentler topography, fertile soils, and surface streams, became a dynamic sugarcane-based enterprise that lasted for a century.

The Danes divided the islands into estates that were largely dedicated to agriculture. Although largely owned by Danes, British managers often administered the estates. The early plantations, particularly on St. Thomas and St. John were primarily dedicated to the production of cotton and indigo, but because of competition from the continent, particularly the southern United States, these two agricultural pursuits were largely abandoned in favor of sugar cane. The economies of St. Croix and St. John were primarily based on sugar cane agriculture and the production of muscovado sugar and rum. In contrast, the economy of St. Thomas was primarily based on trade, although agricultural pursuits also formed an integral part of its economy.

3.1.3 Estate Bovoni

Throughout its Danish colonial history, Estate Bovoni was generally known as plantation 1 and 2 in the Frenchman Bay Quarter (Franskmand Bay Quarter) and/or as Dværgsteen and Emanuel. Over the course of the Danish colonial period the lands changed hands more than twenty-five times (University of Alabama: 2016:12). As with most St. Thomas plantations, the Bovoni enterprise engaged in cotton and sugar cane agriculture well into the 19th-century. Following the virtual demise of cotton and then sugar cane agriculture, these lands reverted to bush and grazing fields in the late 19th and 20th centuries.

The early historic cartographic sources do not provide sufficient detail to discern the presence of settlements within the subject property. Significantly more accurate, the 1839 Hornbeck map of St. Thomas (Figure 11) depicts the Bovoni peninsula as devoid of structures or settlements. Modern cartographic sources such as the 1922 US Coastal Geodetic Map for St. Thomas, the 1952 and 1982 USGS maps for Eastern St. Thomas do not depict structures or settlements located within the subject property.

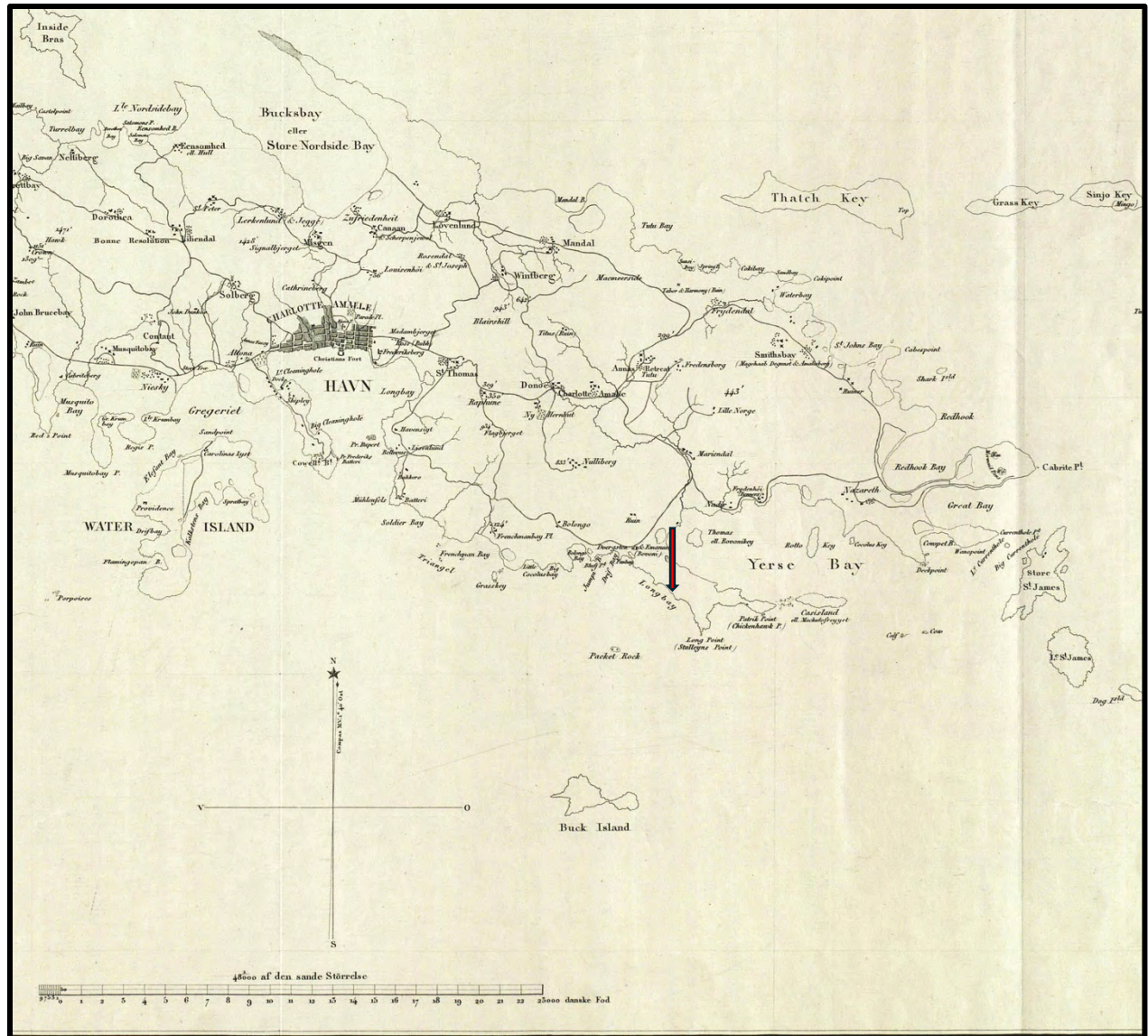


Figure 11: Segment of the 1839 Hornebeck map depicting the location of the subject property (red arrow).
Source map: www5.kb.dk/maps/kortsa/2012/jul/kortatlas/object65501/da/

3.2 Field Survey

No cultural resources were identified during the field survey performed for the subject property. The subject property was found to be extensively disturbed, as evidenced by exposed subsoil and parent rock material in ground surface contexts (Figures 8 and 10).

4.0 CONCLUSIONS AND RECOMMENDATIONS

Our concluding remarks and recommendations are presented below.

4.1 Conclusions

No cultural resources were identified during the Phase I (A&B) Cultural Resources Survey performed for 17 Rem., Estate Bovoni, St. Thomas USVI. The subject property has been extensively disturbed by nearly two centuries of agriculture, and later as grazing fields for cattle as indicated by the barbed wire fencing over a significant part of subject property. As noted in Section 3.0, we found the soils to have been deflated leaving only a few centimeters of the very gravelly subsoil exposed or completely absent leaving the weathered rock parent material exposed on the surface. Other disturbance noted include a cut road on the northeast part of the ridge and push-piles from past (20th century) clearing activities using heavy equipment.

No precolonial or colonial artifacts or shell fragments were found in surface contexts, which are often found scattered at disturbed archaeological sites. The topographic variables such as the very narrow ridge top and steep side slopes and nearly vertical cliffs to the ocean have likely rendered the subject property an unattractive settlement location. We note that the sites of record in the peninsula are contained in more level lands with better access to the sea.

4.2 Recommendations

CocoSol recommends that the Virgin Islands State Historic Preservation Office issue a finding of no objection to the construction of the proposed photovoltaic panel array. If cultural resources are encountered during clearing and/or construction activities, we recommend suspension of the work in the area of concern and that the Virgin Islands State Historic Preservation Office is immediately notified.

5.0 REFERENCES

Donohue, Kourtney

2015 Phase I, Cultural Resource Survey: Estate Bovoni, Parcels 16 & 17 E, Frenchman's Bay Quarter, St. Thomas, USVI. Report submitted to Dry Marina, St. Thomas by Kourtney Donohue, St. John, U.S. Virgin Islands.

Knight, David

2006 A Preliminary Assessment of Cultural Resources Within Parcels 18-1, 18-J, 18-K, and 18-M, Estate Bovoni, #1 & #2 Frenchman's Bay Quarter, St. Thomas, USVI. Report submitted to Boyd Holding USVI by David Knight and the Virgin Islands Historical and Genealogical Resource Center (VIHGRC) of St. Thomas, U.S. Virgin Islands.

Persons, Brooke

2015 Phase II Archaeological Testing and Evaluation

At The Bovoni Estate Site at Plots 17-E And 16, Estate Bovoni, Frenchman's Quarter, St. Thomas, U.S. Virgin Islands. The University of Alabama, Tuscaloosa.

Attachment F – Driveway Permit Application and Plans





DRIVEWAY PERMIT APPLICATION

DATE 10/21/2025

OWNER INFORMATION

Name STB Solar, LLC (A VIElectron, LLC company) c/o Christian Loranger Telephone 1-508-965-8637

Email Address nbdssolar@gmail.com

Parcel(s)No./Address 109402010100, No. Bovoni 17 Remainder, Estate Bovoni, St. Thomas, VI 00802

DRIVEWAY PERMIT FEES	
COMMERCIAL	RESIDENTIAL
\$35 + IMPACT FEE	\$35
IMPACT FEE	*The IMPACT FEE is a one-time cost assessed to commercial permits, to offset the latent effects on the island's infrastructure.
UP TO 3000 SQ. FT. \$450	
OVER 3000 SQ. FT. \$650	
ACCEPTED METHODS OF PAYMENT	
Bank/Cashier's Check, Money Order, Cash, Credit Card	

DESIGNER INFORMATION

Name Hoyle Tanner & Associates, Inc. Email Address _____

Telephone _____ Registration No. _____

Driveway Width <u>20</u> ft.	Swale Width <u>N/A</u> ft.
Driveway Length <u>225</u> ft.	Swale Depth <u>N/A</u> ft.
Grade of proposed Road/Driveway at intersection of Public Road and/or highway	Match existing 2% _____ percent/Indicate plus or minus slope <u>+/-</u>
Along intersection of Culvert	Invert Depth <u>N/A</u> ft., W <u>N/A</u> Ft. & L <u>N/A</u>

Please submit four (4) copies of map showing: site plan, location map and detailed driveway drawings.

DEPARTMENTAL USE ONLY

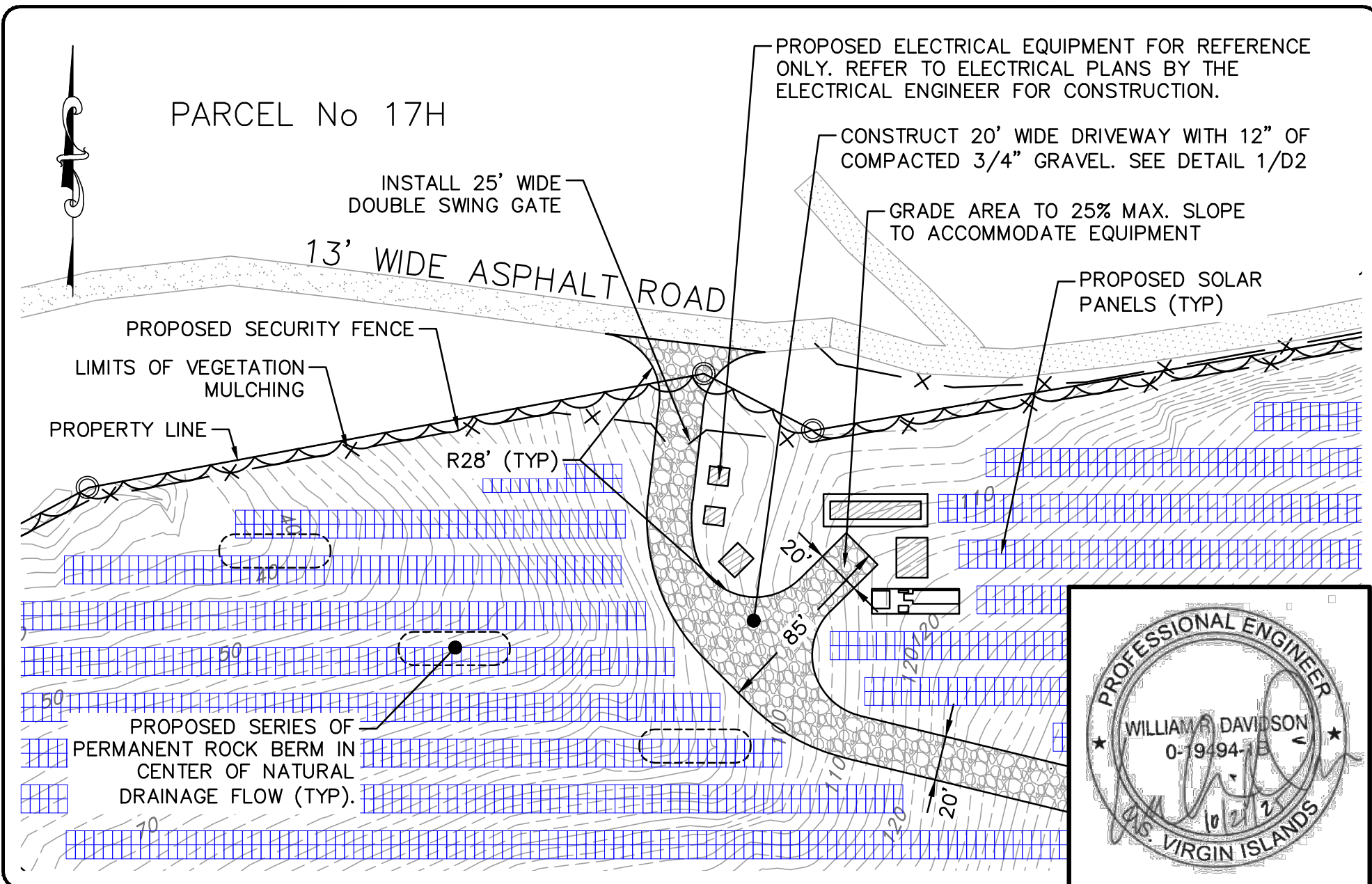
☐ Permit Approved ☐ Permit Disapproved Permit # _____

Date Issued _____ Expiration _____

Total Amount Due _____ Permit Fees Collected _____

Attachments: ☐ Drawings Samples ☐ Construction Specifications

Commissioner _____



ACCESS DRIVEWAY SITE PLAN

BOVONI 17 REMAINDER
ESTATE BOVONI, SAINT THOMAS, VI 00804

STB SOLAR, LLC
A VIELECTRON, LLC COMPANY



95 E. Mitchell Hammock Road
Suite 200
Oviedo, FL 32765
(407) 380-1919
www.hoyletanner.com

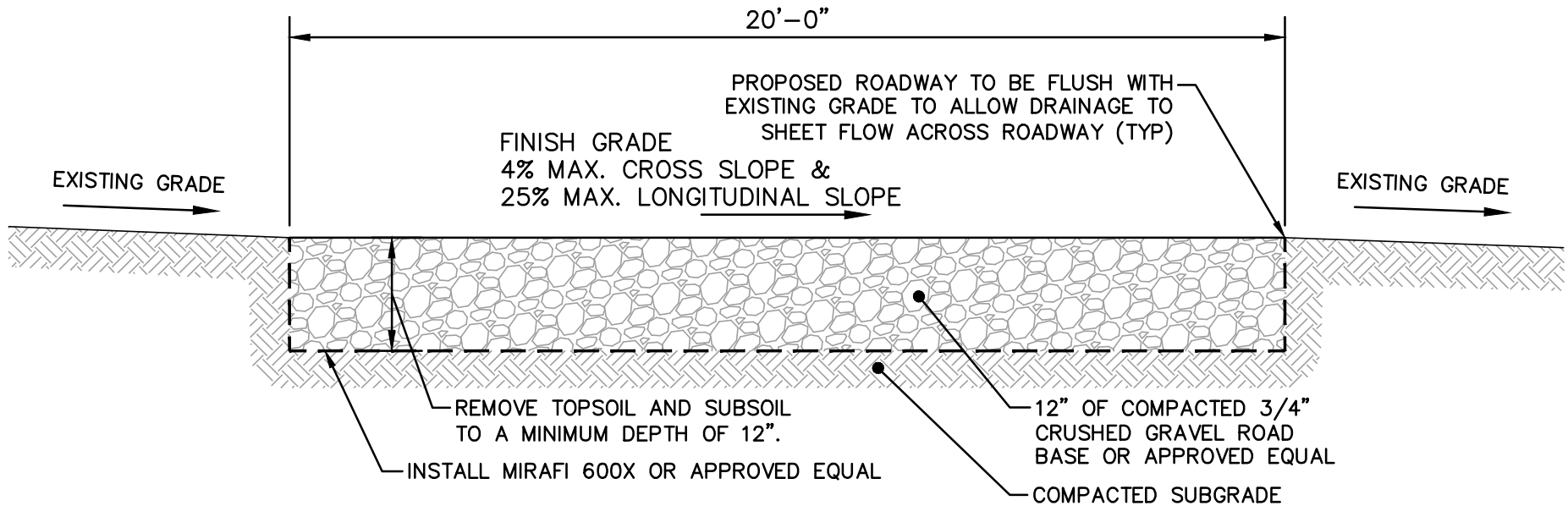
DATE: 10/21/2025

SCALE:

1"=60'

FIGURE:

D1



DRIVEWAY NOTES:

1. THE CONTRACTOR SHALL SUBMIT A SAMPLE OF THE PROPOSED CRUSHED GRAVEL FOR REVIEW AND APPROVAL BY THE DESIGN ENGINEER PRIOR TO THE START OF ROADWAY CONSTRUCTION.
2. THE PROFILE OF THE ROAD SHALL FOLLOW THE EXISTING TERRAIN TO THE GREATEST EXTENT POSSIBLE.
3. THE DRY DENSITY AFTER COMPACTION SHALL NOT BE LESS THAN 95% OF THE STANDARD PROCTOR TEST AND DONE IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM D698.

1
D2

TYPICAL ACCESS DRIVEWAY SECTION

SCALE: NONE



ACCESS DRIVEWAY DETAILS

BOVONI 17 REMAINDER
ESTATE BOVONI, SAINT THOMAS, VI 00804

STB SOLAR, LLC
A VIELECTRON, LLC COMPANY



95 E. Mitchell Hammock Road
Suite 200
Oviedo, FL 32765
(407) 380-1919
www.hoyletanner.com

DATE: 10/21/2025

SCALE:

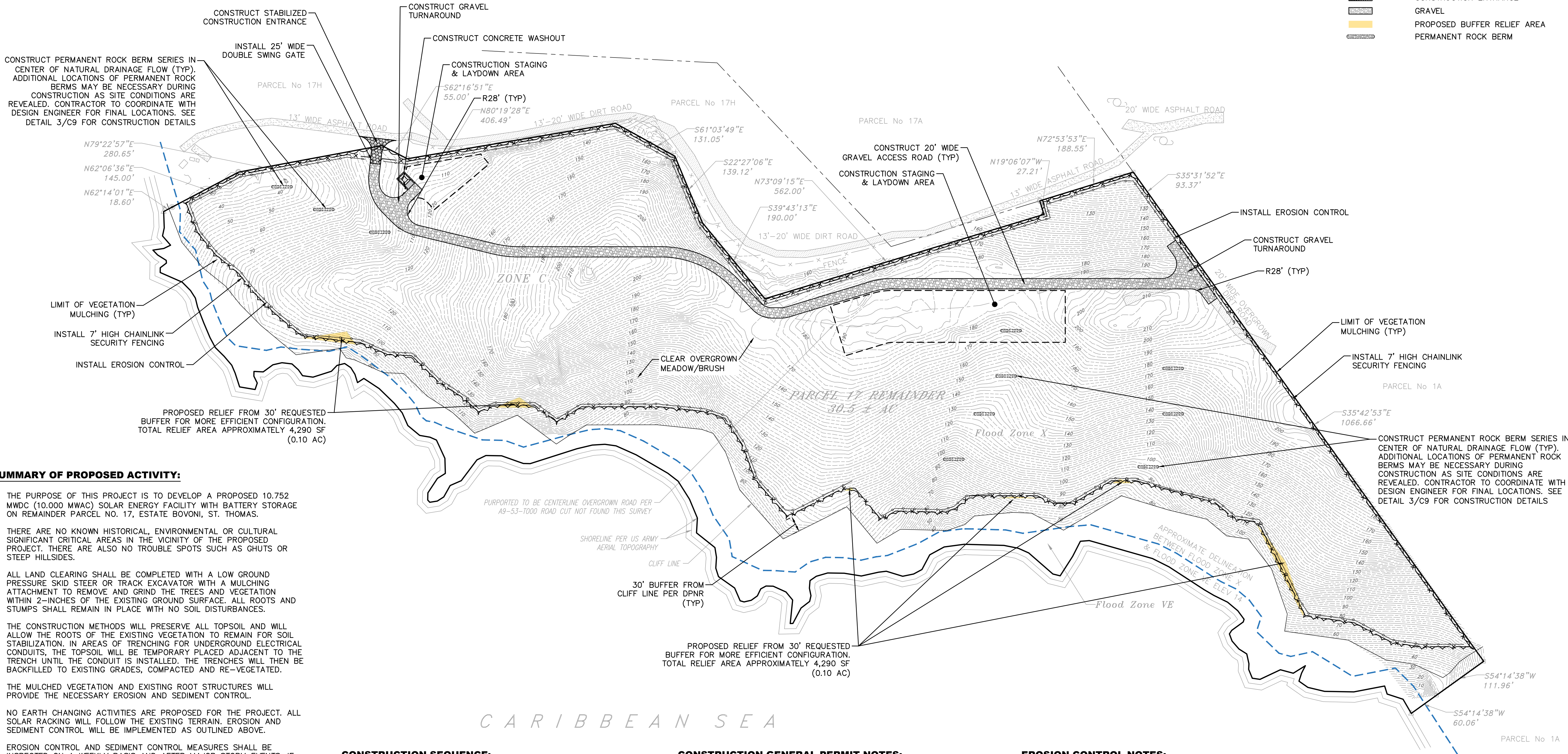
N.T.S.

FIGURE:

D2

Attachment G – Site and Erosion Control Plans





SUMMARY OF PROPOSED ACTIVITY:

1. THE PURPOSE OF THIS PROJECT IS TO DEVELOP A PROPOSED 10,752 MWDC (10,000 MWAC) SOLAR ENERGY FACILITY WITH BATTERY STORAGE ON REMAINDER PARCEL NO. 17, ESTATE BOVONI, ST. THOMAS.
2. THERE ARE NO KNOWN HISTORICAL, ENVIRONMENTAL OR CULTURAL SIGNIFICANT CRITICAL AREAS IN THE VICINITY OF THE PROPOSED PROJECT. THERE ARE ALSO NO TROUBLE SPOTS SUCH AS GHUTS OR STEEP HILLSIDES.
3. ALL LAND CLEARING SHALL BE COMPLETED WITH A LOW GROUND PRESSURE SKID STEER OR TRACK EXCAVATOR WITH A MULCHING ATTACHMENT TO REMOVE AND GRIND THE TREES AND VEGETATION WITHIN 2-INCHES OF THE EXISTING GROUND SURFACE. ALL ROOTS AND STUMPS SHALL REMAIN IN PLACE WITH NO SOIL DISTURBANCES.
4. THE CONSTRUCTION METHODS WILL PRESERVE ALL TOPSOIL AND WILL ALLOW THE ROOTS OF THE EXISTING VEGETATION TO REMAIN FOR SOIL STABILIZATION. IN AREAS OF TRENCHING FOR UNDERGROUND ELECTRICAL CONDUITS, THE TOPSOIL WILL BE TEMPORARY PLACED ADJACENT TO THE TRENCH UNTIL THE CONDUIT IS INSTALLED. THE TRENCHES WILL THEN BE BACKFILLED TO EXISTING GRADES, COMPACTED AND RE-VEGETATED.
5. THE MULCHED VEGETATION AND EXISTING ROOT STRUCTURES WILL PROVIDE THE NECESSARY EROSION AND SEDIMENT CONTROL.
6. NO EARTH CHANGING ACTIVITIES ARE PROPOSED FOR THE PROJECT. ALL SOLAR RACKING WILL FOLLOW THE EXISTING TERRAIN. EROSION AND SEDIMENT CONTROL WILL BE IMPLEMENTED AS OUTLINED ABOVE.
7. EROSION CONTROL AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED ON A WEEKLY BASIS AND AFTER MAJOR STORM EVENTS. IF THE PROPOSED CONTROL MEASURES ARE INSUFFICIENT IN ANY AREAS A MULCH BERM WILL BE INSTALLED TO FOR EROSION AND SEDIMENT CONTROL.
8. THE EXISTING TERRAIN, STORMWATER FLOW PATHS AND GROUND COVER WILL NOT BE CHANGED BY THE CONSTRUCTION OF THIS PROJECT. CURRENTLY STORMWATER SHEET FLOWS SOUTH AND DISCHARGES INTO THE CARIBBEAN SEA. THE DEVELOPMENT OF THE SITE WILL RESULT IN A MINIMAL INCREASE IN IMPERVIOUS COVER FROM THE GROUND SCREWS, EQUIPMENT PADS AND ACCESS DRIVEWAY AS THE AREA BELOW AND AROUND THE PANELS WILL REMAIN PERVIOUS WITH ESTABLISHED VEGETATION. THERE ARE MINIMAL CONCERNS WITH DOWNSTREAM FLOODING DUE TO THE SITE DISCHARGING INTO THE SEA; THEREFORE, NO INFILTRATION BASIN IS PROPOSED FOR RETENTION PURPOSES. PERMANENT ROCK BERM SERIES ARE PROPOSED IN AREAS ON-SITE WITH CONCENTRATED FLOW PATHS TO REDUCE PEAK RUNOFF RATES AND PREVENT EROSION.
9. THE SITE SHALL BE INSPECTED AFTER ALL MAJOR STORM EVENTS. ANY DEFICIENCIES IN THE EROSION CONTROL AND VEGETATION SHALL BE CORRECTED IN A TIMELY MANNER.
10. THERE IS NO PROPOSED WATER, SEWER OR LIGHTING AS PART OF THIS PROJECT.
11. ALL ITEMS TO BE DEMOLISHED SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ALL GOVERNING AGENCIES.

CONSTRUCTION SEQUENCE:

1. SURVEY AND STAKE LIMITS OF ALL WORK.
2. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCES AS SHOWN ON PLANS.
3. INSTALL SILT FENCE (OR APPROVED EQUAL) PERIMETER EROSION CONTROL MEASURES.
4. CLEAR TREES, BRUSH AND VEGETATION WITHIN SECURITY FENCE AND AROUND THE PERIMETER AS SHOWN.
5. INSTALL 7' HIGH CHAINLINK SECURITY FENCING AND GATES AS SHOWN.
6. OBTAIN DPW DRIVEWAY PERMITS AND CONSTRUCT 20' WIDE GRAVEL ACCESS DRIVEWAYS AND TURNAROUND.
7. CONSTRUCT STORMWATER BPM AS SHOWN ON PLANS.
8. INSTALL SOLAR RACKING SCREWS
9. CONSTRUCT SOLAR RACKING AND INSTALL SOLAR PANELS ON RACKING.
10. INSTALL UNDERGROUND CONDUIT, PV INVERTERS, EQUIPMENT PADS, BATTERIES AND POWER POLES.
11. APPLY EROSION CONTROL LOW HEIGHT GRASS MIX TO ANY DISTURBED VEGETATION AREAS THROUGHOUT THE SITE.

CONSTRUCTION GENERAL PERMIT NOTES:

1. THE OWNER IN CONJUNCTION WITH THE CONTRACTOR (OPERATOR) NEEDS TO OBTAIN A CONSTRUCTION GENERAL PERMIT (CGP) FOR LARGE CONSTRUCTION ACTIVITIES (FIVE OR MORE ACRES) FROM THE ENVIRONMENTAL PROTECTION AGENCY (EPA). AS PART OF THE CGP, A STORM WATER NOTICE OF INTENT (NOI) WILL NEED TO BE SUBMITTED TO THE EPA AT LEAST 48 HOURS PRIOR TO COMMENCING CONSTRUCTION. THE NOI WILL NEED TO BE SUBMITTED TO STORM WATER NOTICE OF INTENT (4203M), USEPA, 1200 PENNSYLVANIA, AVE. NW, WASHINGTON, DC 20460.
2. THE CGP OUTLINES A SET OF PROVISIONS MANDATING THE OWNER AND CONTRACTOR COMPLY WITH THE REQUIREMENTS OF THE TERRITORIAL VIRGIN ISLANDS STORM WATER POLLUTION PREVENTION PLANS (VI SWPPP) STORM WATER REGULATIONS, INCLUDING BUT NOT LIMITED TO, STORM WATER POLLUTION PREVENTION PLANS (SWPPP'S), IMPLEMENTATION OR EROSION AND SEDIMENTATION CONTROLS, EQUIPMENT MAINTENANCE GUIDELINES, ETC. PLEASE CONTACT USEPA OFFICE OF WASTEWATER MANAGEMENT AT 202-564-9545 OR AT WWW.EPA.GOV/NPDES/STORMWATER FOR ADDITIONAL INFORMATION.

EROSION CONTROL NOTES:

1. ALL EROSION CONTROL MEASURE SHALL CONFORM TO THE GUIDELINES AND REQUIREMENTS PROVIDED IN THE VIRGIN ISLANDS ENVIRONMENTAL PROTECTION HANDBOOK (VIEPH), 2022 EDITION. THE HANDBOOK MAY BE DOWNLOADED ONLINE OR PURCHASED FROM THE UNIVERSITY OF THE VIRGIN ISLANDS, COOPERATIVE EXTENSION SERVICE.
2. BEFORE ANY EARTH MOVING ACTIVITIES, AND THEREAFTER, EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. THE SMALLEST PRACTICAL AREA OF LAND (5 ACRES MAXIMUM) SHOULD BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHOULD BE KEPT TO A MAXIMUM OF 72 HOURS BEFORE APPLYING TEMPORARY OR PERMANENT EROSION CONTROL MEASURES. CONFINE PERIOD OF DISTURBED AND UNSTABILIZED SOILS TO A MAXIMUM OF FORTY-FIVE DAYS. ALL DITCHES AND SWALES ARE REQUIRED TO BE STABILIZED PRIOR TO DIRECT RECEIPT OF ANY FLOW.
3. REFER TO DWG C7 FOR ADDITIONAL EROSION CONTROL NOTES AND DETAILS.

LEGEND

- SUBJECT PROPERTY LINE
- ABUTTER PROPERTY LINE
- STRUCTURE SETBACK
- FLOOD ZONE LINE
- EX. MINOR CONTOUR
- EX. MAJOR CONTOUR
- PROPOSED SECURITY FENCE
- LIMIT OF MULCHING
- SILT SOCK OR MULCH BERM
- CONSTRUCTION STAGING AREA
- DRAINAGE FLOW
- CONSTRUCTION ENTRANCE
- GRAVEL
- PROPOSED BUFFER RELIEF AREA
- PERMANENT ROCK BERM



PROFESSIONAL ENGINEER
WILLIAM A. DAVIDSON
0-9494-1
VIRGIN ISLANDS

10/30/25
10/15/25
DATE

2
1
REV.

2
1
REV.

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DESIGNED BY
SES

CHECKED BY
WRD

95 E. Mitchell-Hamrick Road
Oviedo, FL 32765
(407) 380-1919
www.hoyletanner.com

HOYLE
TANNER

APPLICANT
STB SOLAR LLC
A VIELECTRON LLC COMPANY
5000 EST ENIGHER ST. 4A, PNB 146
SAINT JOHN, VI 00830

PROJECT
PROPOSED SOLAR ENERGY FACILITY
BOVONI 17 REMAINDER
ESTATE BOVONI
SAINT THOMAS, VI 00804

SITE PREP / EROSION
CONTROL PLAN

C3

PROJECT NO. 23.141001.00
SHEET 3 OF 9

SHEET 4 OF 9

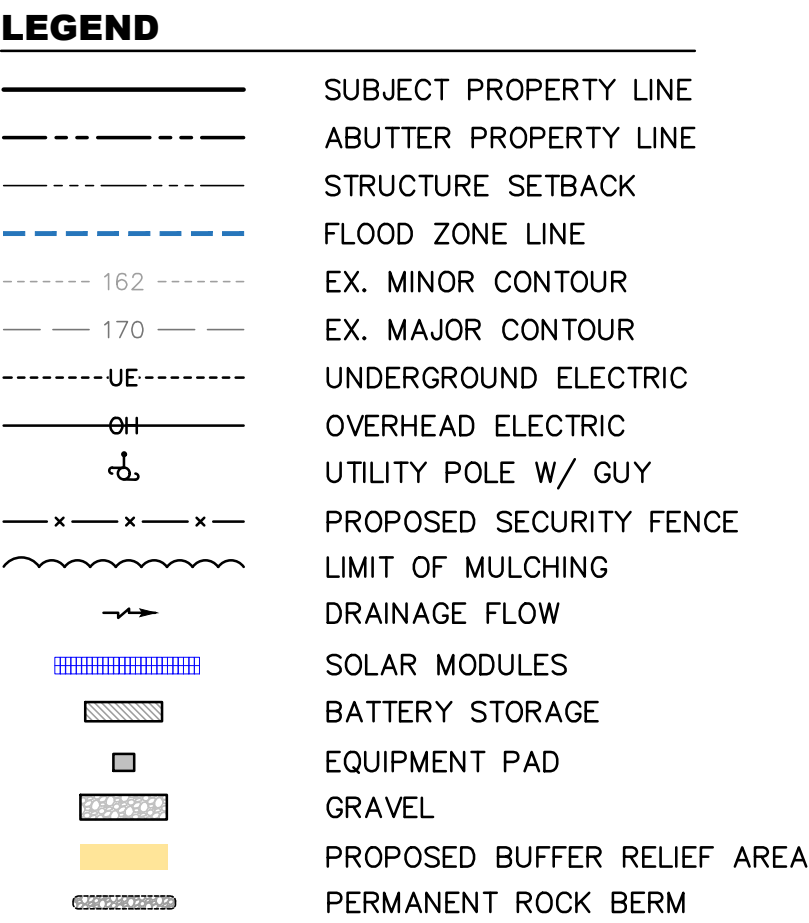
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1

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3



EROSION CONTROL NOTES:

1. **POLLUTION PREVENTION.** MINIMIZE DISTURBED AREAS AND PROTECT NATURAL DOWNGRAIDENT BUFFER AREAS TO THE EXTENT PRACTICABLE. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION. MINIMIZE THE DISTURBANCE OF STEEP SLOPES. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND VOLUME, TO MINIMIZE EROSION AT OUTLETS. THE DISCHARGE MAY NOT RESULT IN EROSION OF ANY OPEN DRAINAGE CHANNELS, SWALES, STREAM CHANNELS OR STREAM BANKS, UPLAND, OR COASTAL OR FRESHWATER WETLANDS OFF THE PROJECT SITE. WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 25 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 25 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS.
2. **SEDIMENT BARRIERS.** PRIOR TO CONSTRUCTION, PROPERLY INSTALL SEDIMENT BARRIERS AT THE DOWNGRAIDENT EDGE OF ANY AREA TO BE DISTURBED AND ADJACENT TO ANY DRAINAGE CHANNELS WITHIN THE DISTURBED AREA. SEDIMENT BARRIERS SHOULD BE INSTALLED DOWNGRAIDENT OF SOIL OR SEDIMENT STOCKPILES AND STORMWATER PREVENTED FROM RUNNING ONTO THE STOCKPILE. MAINTAIN THE SEDIMENT BARRIERS BY REMOVING ACCUMULATED SEDIMENT, OR REMOVING AND REPLACING THE BARRIER, UNTIL THE DISTURBED AREA IS PERMANENTLY STABILIZED. WHERE A DISCHARGE TO A STORM DRAIN INLET OCCURS, IF THE STORM DRAIN CARRIES WATER DIRECTLY TO A SURFACE WATER AND YOU HAVE AUTHORITY TO ACCESS THE STORM DRAIN INLET, YOU MUST INSTALL AND MAINTAIN PROTECTION MEASURES THAT REMOVE SEDIMENT FROM THE DISCHARGE.
3. **STABILIZED CONSTRUCTION ENTRANCE.** PRIOR TO CONSTRUCTION, PROPERLY INSTALL A STABILIZED CONSTRUCTION ENTRANCE (SCE) AT ALL POINTS OF EGRESS FROM THE SITE. THE SCE IS A STABILIZED PAD OF AGGREGATE, UNDERLAIN BY A GEOTEXTILE FILTER FABRIC, USED TO PREVENT TRAFFIC FROM TRACKING MATERIAL AWAY FROM THE SITE ONTO PUBLIC ROWS. MAINTAIN THE SCE UNTIL ALL DISTURBED AREAS ARE STABILIZED.
4. **TEMPORARY STABILIZATION.** WITHIN 7 DAYS OF THE CESSATION OF CONSTRUCTION ACTIVITIES IN AN AREA THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS, STABILIZE ANY EXPOSED SOIL WITH MULCH, OR OTHER NON-ERODIBLE COVER. STABILIZE AREAS WITHIN 75 FEET OF A NATURAL RESOURCE WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OF THE SOIL OR PRIOR TO ANY STORM EVENT, WHICHEVER COMES FIRST.
5. **REMOVAL OF TEMPORARY MEASURES.** REMOVE ANY TEMPORARY CONTROL MEASURES, SUCH AS MULCH BERMS OR SILT SOCKS, WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE.
6. **PERMANENT STABILIZATION.** IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, OR THROUGH THE USE OF PERMANENT MULCH, OR RIP-RAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS; AMEND AREAS OF DISTURBED SUBSOILS WITH TOPSOIL OR COMPOST; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM DROUGHT. NEWLY SEEDED AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL THE VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REWORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. ONE OR MORE OF THE FOLLOWING MAY APPLY TO A PARTICULAR SITE.
7. **SEEDED AREAS.** FOR SEEDED AREAS, PERMANENT STABILIZATION MEANS A 95% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.
- A. PERMANENT MULCH. FOR MULCHED AREAS, PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL. MULCH FROM TREE GRINDINGS MAY BE USED AS EROSION CONTROL FOR PERMANENT STABILIZATION. THE MULCH MIX AND COVERAGE SHALL BE REVIEWED AND APPROVED BY THE DESIGN ENGINEER PRIOR TO BEING DETERMINED AS STABILIZED.
- B. RIP-RAP. FOR AREAS STABILIZED WITH RIP-RAP, PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIP-RAP HAVE AN APPROPRIATE BACKING OF A WELL-GRADED GRAVEL

OR APPROVED GEOTEXTILE TO PREVENT SOIL MOVEMENT FROM BEHIND THE RIP-RAP. STONE MUST BE SIZED APPROPRIATELY. ANGULAR STONE SHALL BE USED.

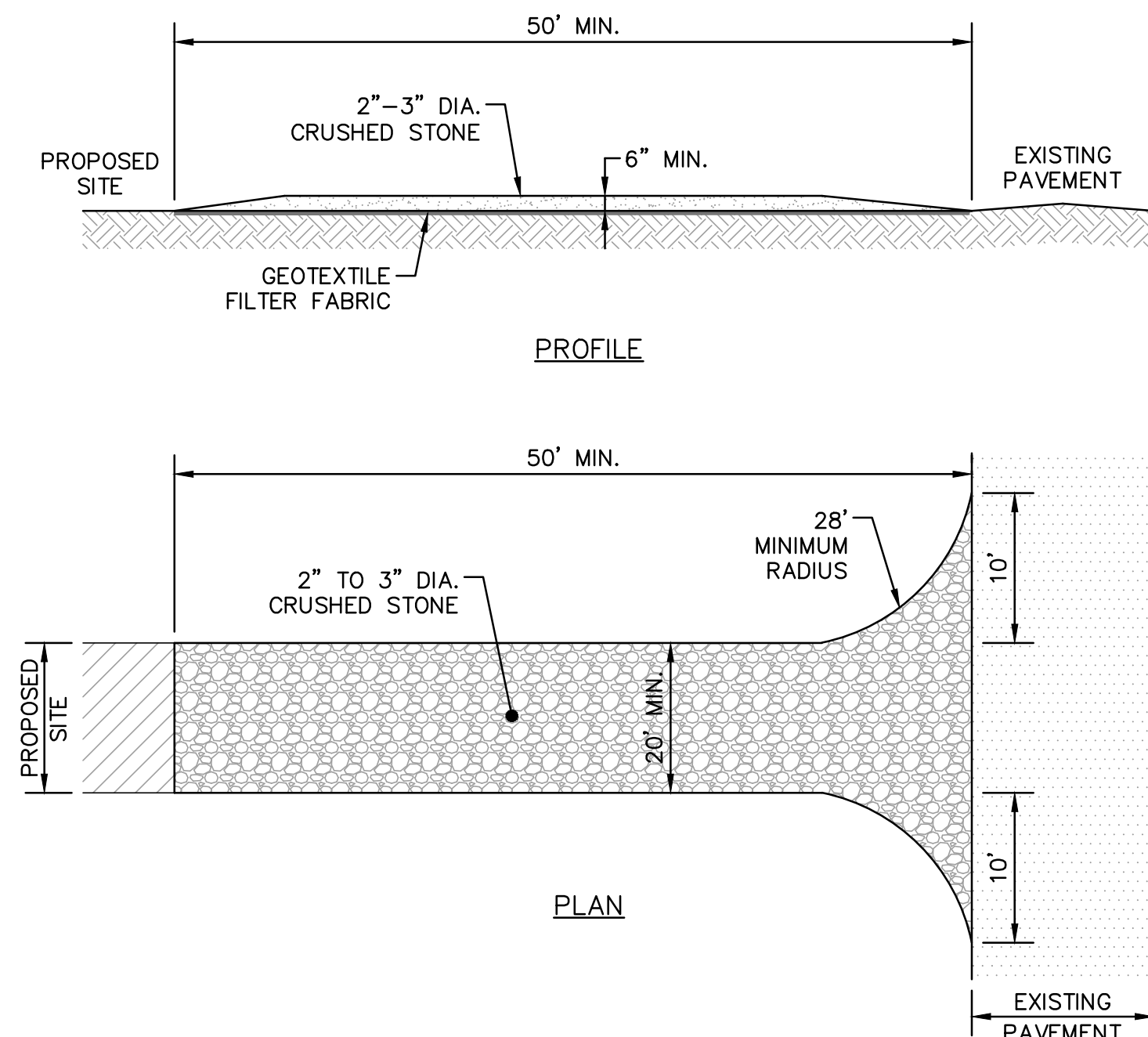
- C. AGRICULTURAL USE. FOR CONSTRUCTION PROJECTS ON LAND USED FOR AGRICULTURAL PURPOSES (E.G., PIPELINES ACROSS CROP LAND), PERMANENT STABILIZATION MAY BE ACCOMPLISHED BY RETURNING THE DISTURBED LAND TO AGRICULTURAL USE.
- D. PAVED AREAS. FOR PAVED AREAS, PERMANENT STABILIZATION MEANS THE PLACEMENT OF THE COMPACTED GRAVEL SUB-BASE IS COMPLETED, PROVIDED IT IS FREE OF FINE MATERIALS THAT MAY RUNOFF WITH A RAIN EVENT
- E. DITCHES, CHANNELS, AND SWALES. FOR OPEN CHANNELS, PERMANENT STABILIZATION MEANS THE CHANNEL IS STABILIZED WITH A 90% COVER OF HEALTHY VEGETATION, WITH A WELL-GRADED RIP-RAP LINING, TURF REINFORCEMENT MAT, OR WITH ANOTHER NON-EROSIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE CHANNEL BANKS, OR DOWN-CUTTING OF THE CHANNEL.
9. **STORMWATER CHANNELS.** DITCHES, SWALES, AND OTHER OPEN STORMWATER CHANNELS MUST BE DESIGNED, CONSTRUCTED, AND STABILIZED USING MEASURES THAT ACHIEVE LONG-TERM EROSION CONTROL. DITCHES, SWALES AND OTHER OPEN STORMWATER CHANNELS MUST BE SIZED TO HANDLE, AT A MINIMUM, THE EXPECTED VOLUME RUN-OFF. EACH CHANNEL SHOULD BE CONSTRUCTED IN SECTIONS SO THAT THE SECTION'S GRADING, SHAPING, AND INSTALLATION OF THE PERMANENT LINING CAN BE COMPLETED THE SAME DAY. IF A CHANNEL'S FINAL GRADING OR LINING INSTALLATION MUST BE DELAYED, THEN DIVERSION BERMS MUST BE USED TO DIVERT STORMWATER AWAY FROM THE CHANNEL, PROPERLY-SPACED CHECK DAMS MUST BE INSTALLED IN THE CHANNEL TO SLOW THE WATER VELOCITY, AND A TEMPORARY LINING INSTALLED ALONG THE CHANNEL TO PREVENT SCOURING.

- A. THE CHANNEL SHOULD RECEIVE ADEQUATE ROUTINE MAINTENANCE TO MAINTAIN CAPACITY AND PREVENT OR CORRECT ANY EROSION OF THE CHANNEL'S BOTTOM OR SIDE SLOPES.
- B. WHEN THE WATERSHED DRAINING TO A DITCH OR SWALE IS LESS THAN 1 ACRE OF TOTAL DRAINAGE AND LESS THAN ¼ ACRE OF IMPERVIOUS AREA, DIVERSION OF RUNOFF TO ADJACENT WOODED OR OTHERWISE VEGETATED BUFFER AREAS IS ENCOURAGED WHERE THE OPPORTUNITY EXISTS.

10. **SEDIMENT BASINS.** SEDIMENT BASINS MUST BE DESIGNED TO PROVIDE STORAGE FOR EITHER THE CALCULATED RUNOFF FROM A 2-YEAR, 24-HOUR STORM OR PROVIDE FOR 3,600 CUBIC FEET OF CAPACITY PER ACRE DRAINING TO THE BASIN. OUTLET STRUCTURES MUST DISCHARGE WATER FROM THE SURFACE OF THE BASIN WHENEVER POSSIBLE. EROSION CONTROLS AND VELOCITY DISSIPATION DEVICES MUST BE USED IF THE DISCHARGING WATERS ARE LIKELY TO CREATE EROSION. ACCUMULATED SEDIMENT MUST BE REMOVED AS NEEDED FROM THE BASIN TO MAINTAIN AT LEAST ½ OF THE DESIGN CAPACITY OF THE BASIN.
11. **ROADS.** GRAVEL AND PAVED ROADS MUST BE DESIGNED AND CONSTRUCTED WITH CROWNS OR OTHER MEASURES, SUCH AS WATER BARS, TO ENSURE THAT STORMWATER IS DELIVERED IMMEDIATELY TO ADJACENT STABLE DITCHES, VEGETATED BUFFER AREAS, CATCH BASIN INLETS, OR STREET GUTTERS.
12. **CULVERTS.** CULVERTS MUST BE SIZED TO AVOID UNINTENDED FLOODING OF UPSTREAM AREAS OR FREQUENT OVERTOPPING OF ROADWAYS. CULVERT INLETS MUST BE PROTECTED WITH APPROPRIATE MATERIALS FOR THE EXPECTED ENTRANCE VELOCITY, AND PROTECTION MUST EXTEND AT LEAST AS HIGH AS THE EXPECTED MAXIMUM ELEVATION OF STORAGE BEHIND THE CULVERT. CULVERT OUTLET DESIGN MUST INCORPORATE MEASURES, SUCH AS APRONS, TO PREVENT SCOUR OF THE STREAM CHANNEL. OUTLET PROTECTION MEASURES MUST BE DESIGNED TO STAY WITHIN THE CHANNEL LIMITS. THE DESIGN MUST TAKE ACCOUNT OF TAILWATER DEPTH.
13. **PARKING AREAS.** PARKING AREAS MUST BE CONSTRUCTED TO ENSURE RUNOFF IS DELIVERED TO ADJACENT SWALES, CATCH BASINS, CURB GUTTERS, OR BUFFER AREAS WITHOUT ERODING AREAS DOWNSLOPE. THE PARKING AREA'S SUB-BASE COMPACTION AND GRADING MUST BE DONE TO ENSURE RUNOFF IS EVENLY DISTRIBUTED TO ADJACENT BUFFERS OR SIDE SLOPES. CATCH BASINS MUST BE LOCATED AND SET TO PROVIDE ENOUGH STORAGE DEPTH AT THE INLET TO ALLOW INFLOW OF PEAK RUNOFF RATES WITHOUT BY-PASS OF RUNOFF TO OTHER AREAS.

EROSION CONTROL BERM NOTES:

1. EROSION CONTROL BERM MAY BE USED BY THE CONTRACTOR AS AN APPROVED EQUAL TO THE PROPOSED SILT FENCE FOR PERIMETER EROSION CONTROL.
2. THE BERM SHALL BE CONSTRUCTED FROM STUMP AND VEGETATION GRINDINGS. THE SOIL WITHIN THE ROOT BALL SHALL REMAIN WHEN GROUND TO ADD STRUCTURE TO THE MEDIA.
3. THE BERM SHALL BE CONSTRUCTED BY HAND, MACHINERY OR PNEUMATIC BLOWER.
4. TALL GRASS, BRUSH OR WOODY VEGETATION SHALL BE CUT OR REMOVED PRIOR TO INSTALLATION TO AVOID VOIDS AND BRIDGES THAT WOULD ALLOW FINE SOIL PARTICLES TO WASH AWAY.
5. THE BERM SHALL BE A MINIMUM OF 12 INCHES HIGH AND A MINIMUM OF TWO FEET WIDE. ON LONGER STEEPER SLOPES, THE BERM SHALL BE HIGHER AND WIDER.

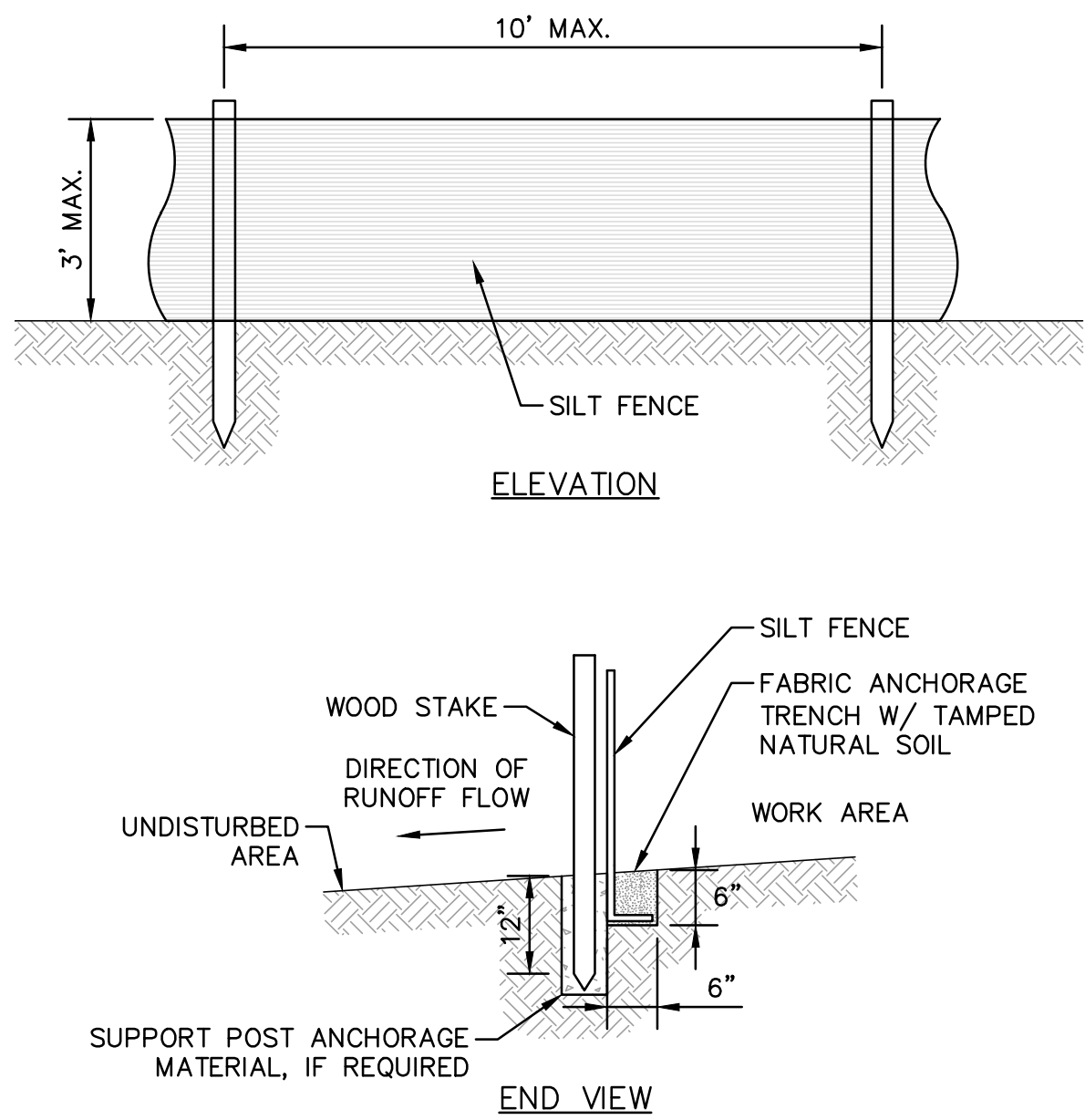


STABILIZED CONSTRUCTION ENTRANCE/EXIT NOTES:

1. CONSTRUCT PAD AT THE SITE ENTRANCE(S) AS SHOWN ON THE PLANS.
2. THE ENTRANCE/EXIT PAD SHALL BE A MINIMUM OF 50 FEET LONG AND 20 FT WIDE.
3. THE PAD SHALL BE A MINIMUM OF 6 INCHES THICK WITH 2-3 INCH ANGULAR AGGREGATE.
4. THE AGGREGATE SHALL BE PLACED OVER A GEOTEXTILE FABRIC TO PREVENT STONES FROM PUSHING INTO NATIVE SOIL.
5. THE PAD SHALL BE INSPECTED WEEKLY AND BEFORE AND AFTER EACH STORM. THE PAD SHALL BE REPLACED IF THE VOIDS BECOME FILLED WITH SEDIMENT.

2 C7 STABILIZED CONSTRUCTION ENTRANCE/EXIT DETAIL

SCALE: NONE

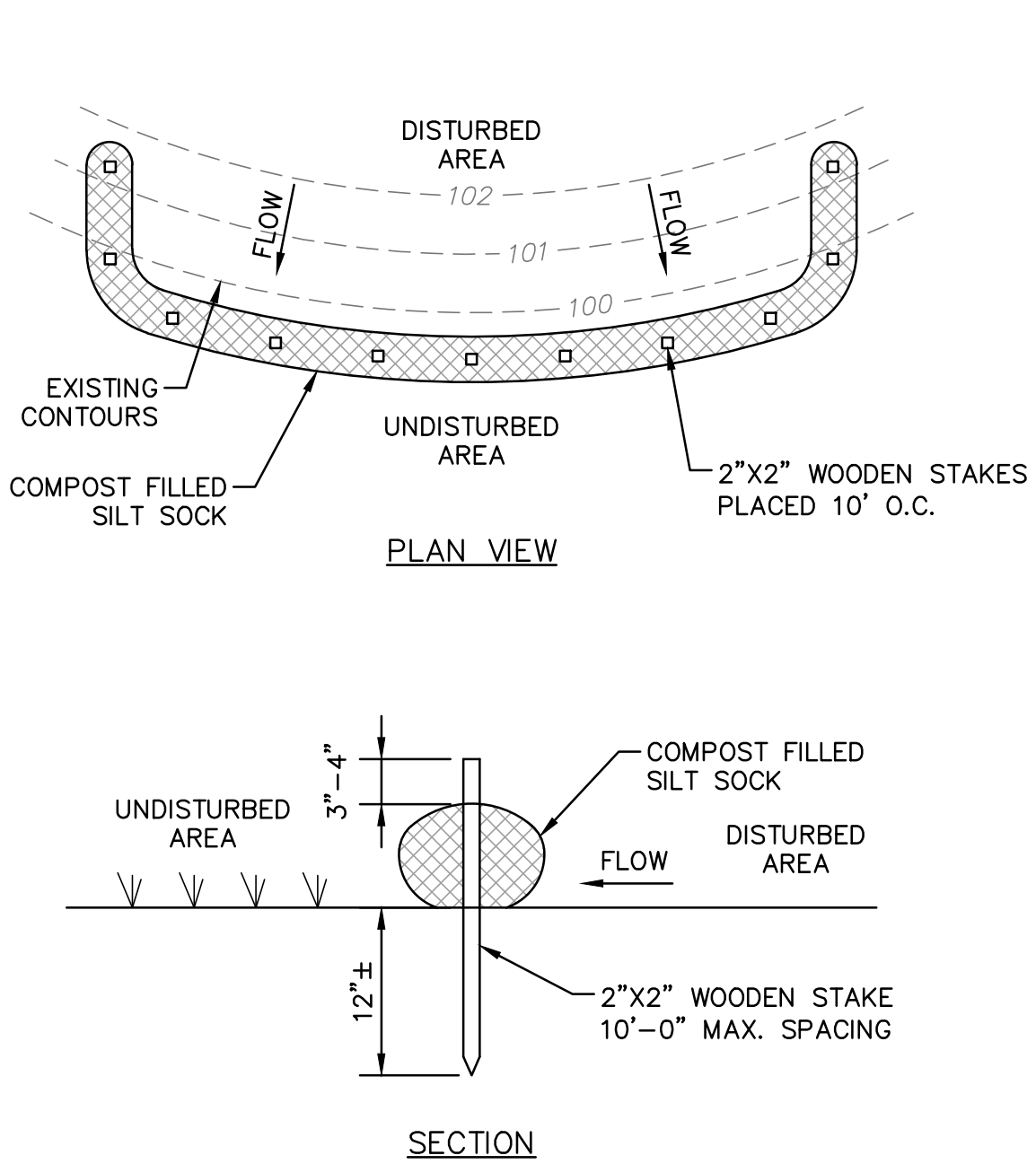


SILT FENCE NOTES:

1. SPACING OF FENCE POSTS NOT TO EXCEED 10'-0".
2. SILT FENCE SHALL BE INSTALLED BEFORE ANY EARTH REMOVAL OR EXCAVATION TAKES PLACE.
3. FILTER FABRIC TO BE FASTENED SECURELY TO POSTS WITH WIRE TIES OR STAPLES AT TOP, MIDPOINT AND BOTTOM.
4. OVERLAP BY 6". FOLD AND STAPLE ADJOINING SECTIONS OF FILTER FABRIC.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED, AND THE MATERIAL REMOVED WHEN "BULGES" DEVELOP. DO NOT DEPOSIT THE MATERIAL NEAR WETLANDS OR WATERCOURSES.
6. FILTER FABRIC SHALL BE ENTRENCHED 6" MINIMUM BELOW EXISTING OR FINISHED GRADE.

3 C7 SILT FENCE EROSION CONTROL DETAIL

SCALE: NONE

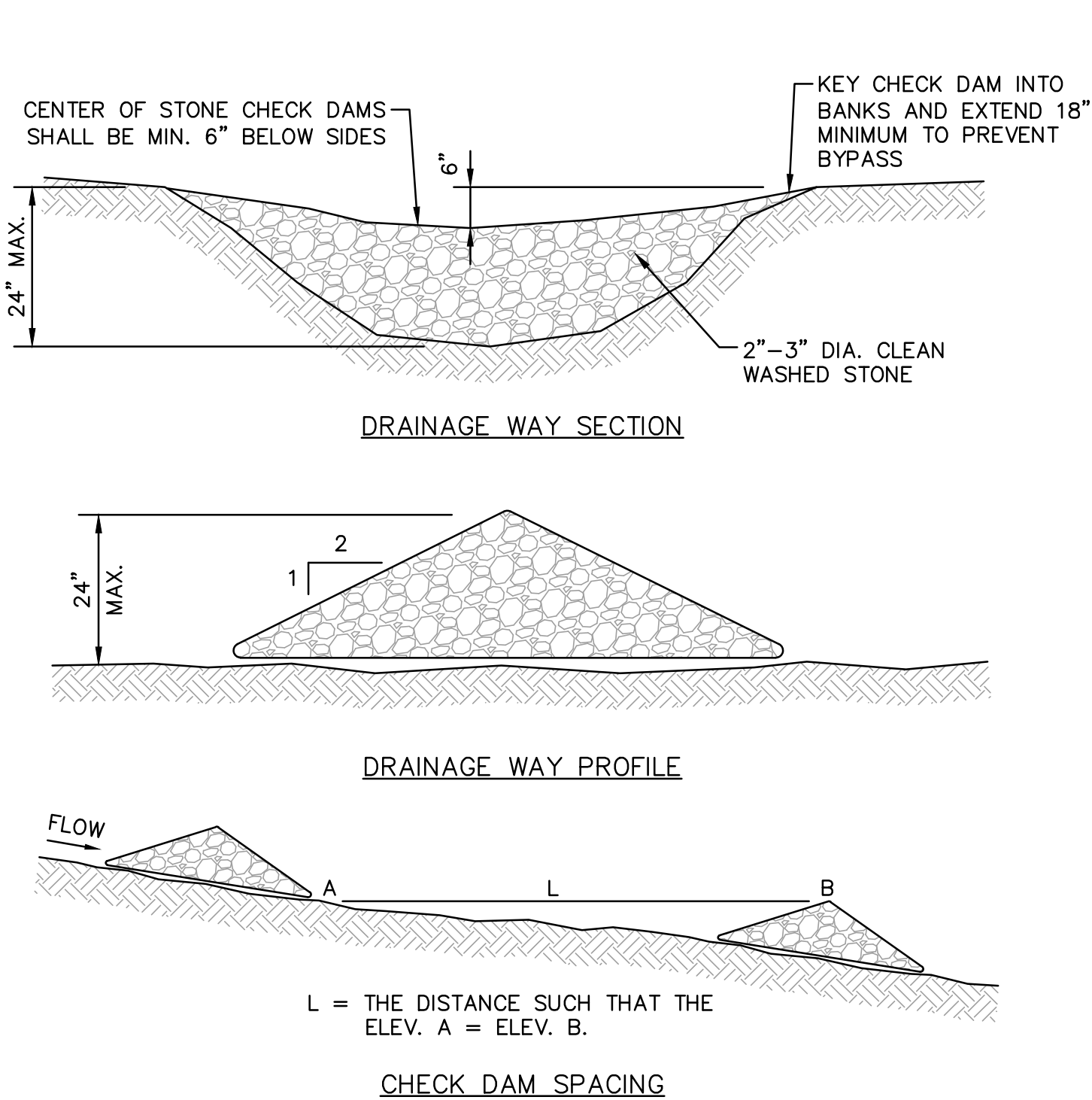


SILT SOCK NOTES:

1. SILT SOCK MAY BE USED BY THE CONTRACTOR AS AN APPROVED EQUAL TO THE PROPOSED SILT FENCE FOR PERIMETER EROSION CONTROL.
2. SILT SOCK SHALL BE INSTALLED ON THE DOWNSTREAM EDGE OF ANY EARTH REMOVAL OR EXCAVATION AND REMOVED WHEN THE AREA IS STABILIZED.
3. INSTALL SILT SOCK AROUND ALL MATERIAL STOCKPILES.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED, AND THE MATERIAL REMOVED WHEN "BULGES" DEVELOP. DO NOT DEPOSIT THE MATERIAL NEAR WETLANDS OR WATERCOURSES.

4 C7 SILT SOCK EROSION CONTROL DETAIL (AS AN APPROVED EQUAL)

SCALE: NONE



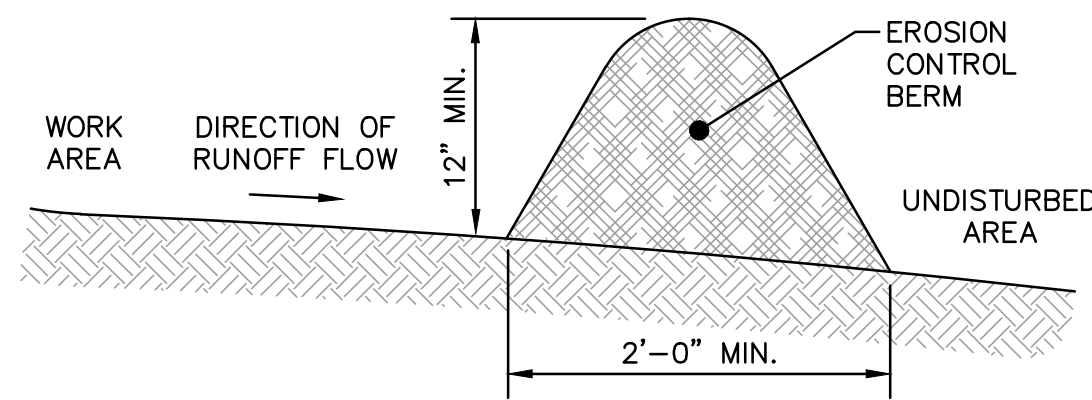
CHECK DAM SPACING

CHECK DAM NOTES:

1. TEMPORARY CHECK DAMS ARE INTENDED TO BE INSTALLED AS NEEDED AS PART OF THE CONTRACTOR'S OVERALL EROSION CONTROL MEASURES.
2. CHECK DAMS SHALL BE INSTALLED PRIOR TO DIRECTING RUNOFF TO THE SWALE.
3. THE MAXIMUM HEIGHT OF A CHECK DAM SHALL BE 2 FEET WITH A 6 INCH DEPRESSION AT ITS CENTER FOR OVERFLOW.
4. THE CHECK DAMS SHALL BE REMOVED WHEN THE SWALE IS STABILIZED WITH VEGETATION (90% COVERAGE).

5 C7 TEMPORARY STONE CHECK DAM DETAIL (AS NEEDED)

SCALE: NONE



1 C7 EROSION CONTROL BERM DETAIL (AS AN APPROVED EQUAL)

SCALE: NONE



DATE	REVISION DESCRIPTION	REV.	CHECKED BY	DRAWN BY	DESIGNED BY	DATE
10/15/25	ISSUED FOR DPNR & STP COMMITTEE REVIEW AND APPROVAL	1	WRD	SES	SES	SEPTEMBER 19, 2024
10/30/25	ISSUED FOR DPNR & STP PERMITTING - NOT FOR CONSTRUCTION	2				

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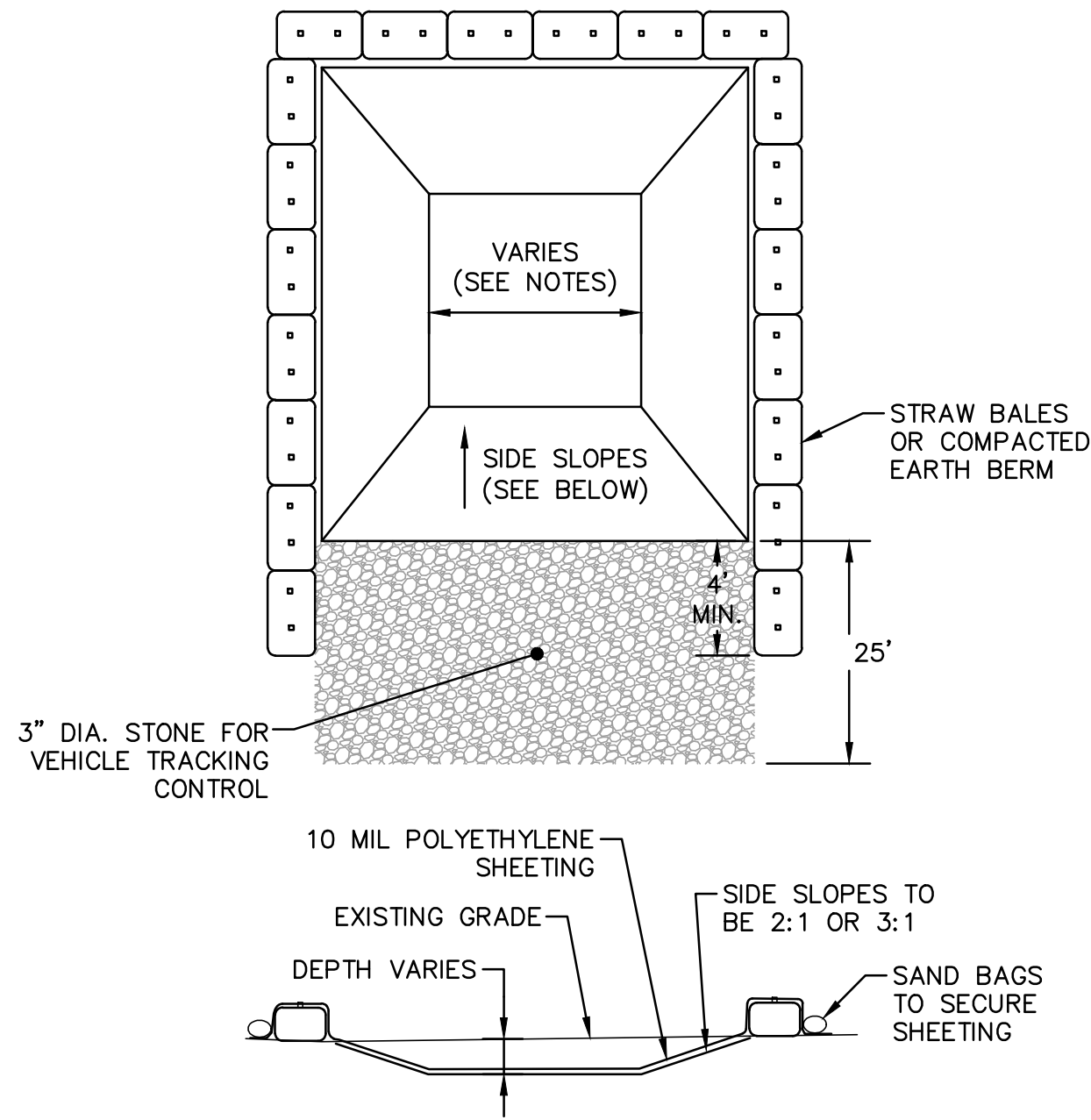
APPLICANT	STB SOLAR LLC A VIELECTRON LLC COMPANY 5000 EST ENIGHER STA 4A, PMB 146 SAINT JOHN, VI 00830
PROJECT	PROPOSED SOLAR ENERGY FACILITY BOYONI 17 REMANDER ESTATE BOYONI SAINT THOMAS, VI 00804

EROSION CONTROL NOTES & DETAILS

C7

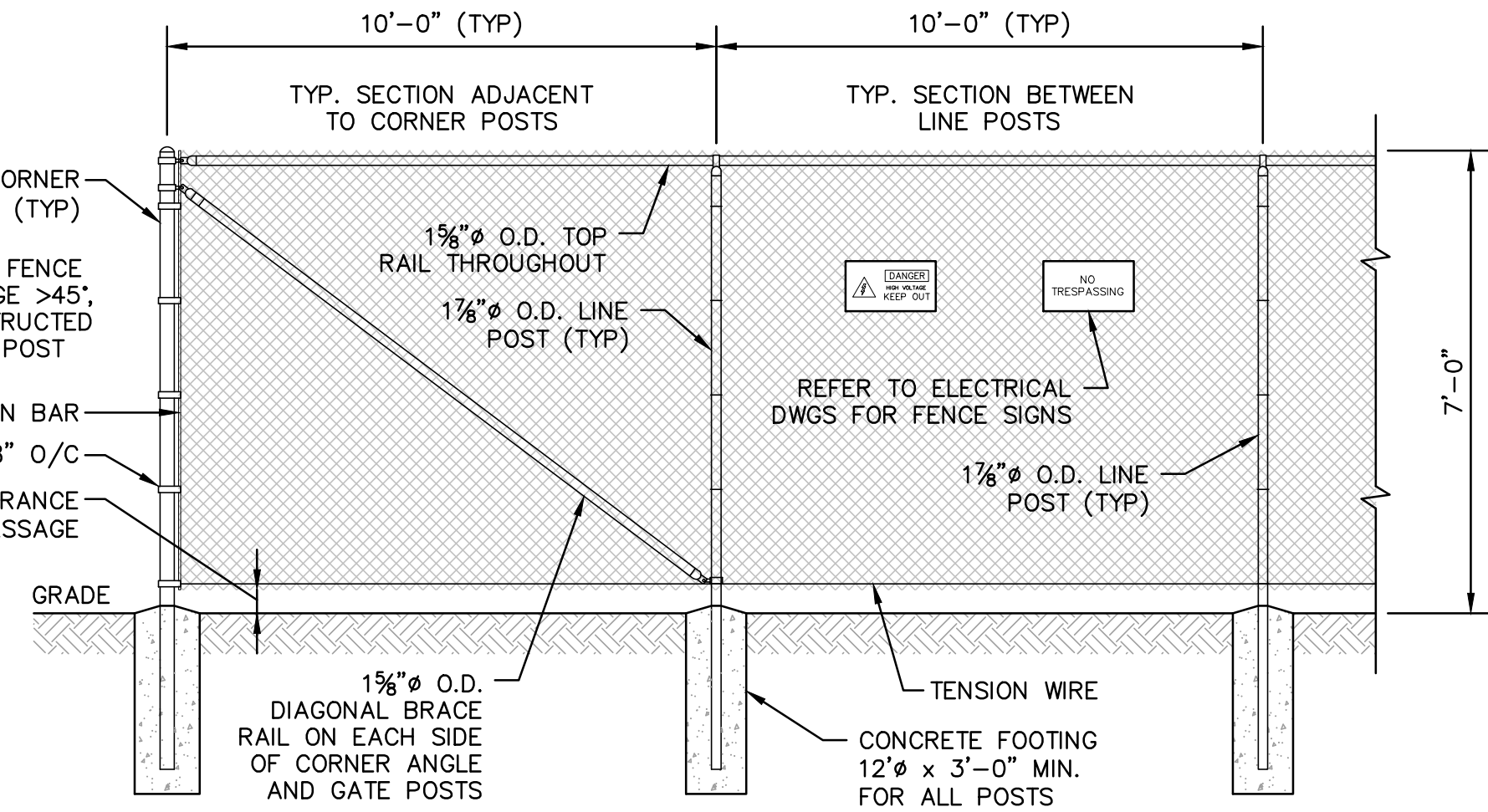
PROJECT NO. 23.141001.00

SHEET 7 OF 9



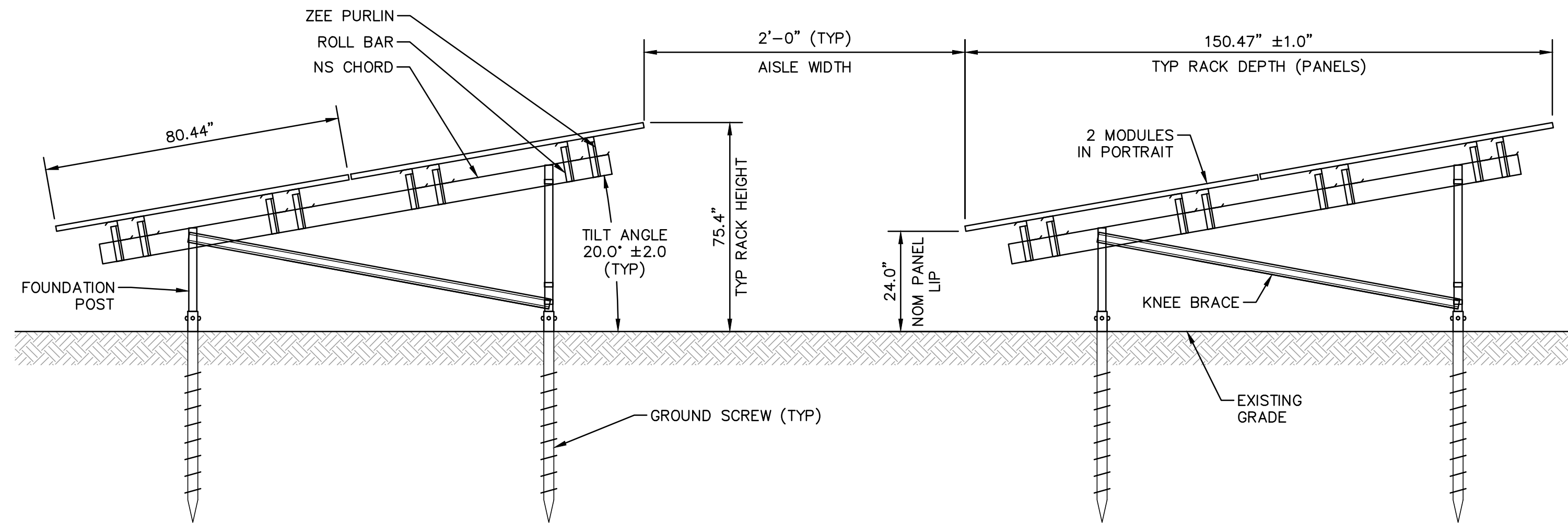
WASHOUT AREA NOTES:

1. CONCRETE WASHOUT AREA(S) SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE. THE CONCRETE WASHOUT AREA SHALL BE ENTIRELY SELF-CONTAINED.
2. THE CONTRACTOR SHALL SUBMIT THE DESIGN, LOCATION AND SIZING OF THE CONCRETE WASHOUT AREA(S) WITH THE PROJECT'S EROSION AND SEDIMENTATION CONTROL PLAN.
3. LOCATION: WASHOUT AREA(S) ARE TO BE LOCATED A MINIMUM OF 50 FEET FROM ANY STREAM, WETLAND, STORM DRAIN, OR ANY OTHER SENSITIVE RESOURCE. ALL CONCRETE DRIVERS SHALL BE AWARE OF THE LOCATION OF THE WASHOUT AREA PRIOR TO ANY CONCRETE PLACEMENT.
4. THE WASHOUT MUST HAVE SUFFICIENT VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS INCLUDING, BUT NOT LIMITED TO, OPERATIONS ASSOCIATED WITH GROUT AND MORTAR.
5. SURFACE DISCHARGE IS UNACCEPTABLE. THEREFORE, STRAW BALES OR OTHER CONTROL MEASURES, SHOULD BE USED AROUND THE PERIMETER OF THE CONCRETE WASHOUT AREA FOR CONTAINMENT.
6. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CONCRETE AREA(S) AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO CONCRETE TRUCK OPERATORS. WASHOUT AREA(S) SHOULD BE FLAGGED WITH SAFETY FENCING OR OTHER APPROVED METHODS.
7. WASHOUT(S) ARE TO BE INSPECTED AT LEAST ONCE A WEEK FOR STRUCTURAL INTEGRITY, ADEQUATE HOLDING CAPACITY AND CHECKED FOR LEAKS, TEARS, OR OVERFLOWS. WASHOUT AREAS SHOULD BE CHECKED AFTER EVERY RAIN EVENT.
8. HARDENED CONCRETE WASTE SHOULD BE REMOVED AND DISPOSED OF WHEN THE WASTE HAS ACCUMULATED TO HALF OF THE CONCRETE WASHOUT'S HEIGHT. ALL CONCRETE WASTE SHALL BE DISPOSED OF BY THE CONTRACTOR IN ACCORDANCE WITH ALL APPLICABLE LOCAL AND STATE LAWS, REGULATIONS, AND GUIDELINES



FENCE NOTES:

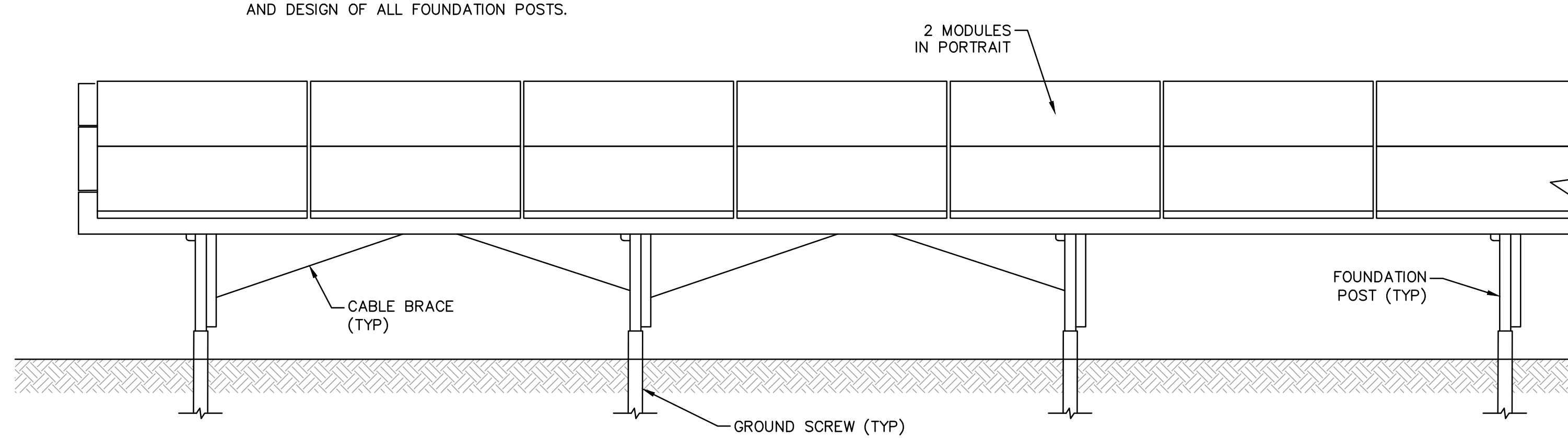
1. REFER TO ELECTRICAL DRAWINGS FOR FINAL FENCE DETAILS AND GROUNDING REQUIREMENTS. THE ELECTRICAL PLANS SHALL GOVERN IN THE CASE OF ANY DISCREPANCIES BETWEEN THE DRAWINGS.
2. ALL FENCE POSTS SHALL BE 10' AND EMBEDDED A MIN. 3' INTO THE CONCRETE FOOTING.
3. FENCE SIGNAGE MUST BE LOCATED AT EYE LEVEL. SIGNS MUST BE LOCATED ON ALL GATES AND ALL SIDES, NO GREATER THAN 50' BETWEEN SIGNS. REFER TO ELECTRICAL DWGS FOR ADDITIONAL INFORMATION
4. AFFIX APPROPRIATE SYSTEM OWNER NAME AND CONTACT INFO DECAL TO ALL FENCE SIGNAGE.
5. BOND GATES TO GATE POST WITH FLEXIBLE BRAIDED GROUNDING STRAP.
6. FENCE TO BE MIN. 15' AWAY FROM SOLAR ARRAY, TO AVOID NEC GROUNDING REQUIREMENT. GATES MUST BE GROUNDED PER NESC RULE 092E. REFER TO ELECTRICAL DWGS FOR ADDITIONAL INFORMATION



SOLAR RACKING NOTES:

1. THESE DETAILS ARE INTENDED FOR REFERENCE ONLY FOR SITE PERMITTING AND ARE SOLELY BASED ON INFO PROVIDED BY THE SOLAR RACKING PROVIDER.
2. REFER TO SOLAR RACKING PLANS FOR ALL FINAL ASPECTS OF THE RACKING DESIGN AND FOR LAYOUT AND DESIGN OF ALL FOUNDATION POSTS.

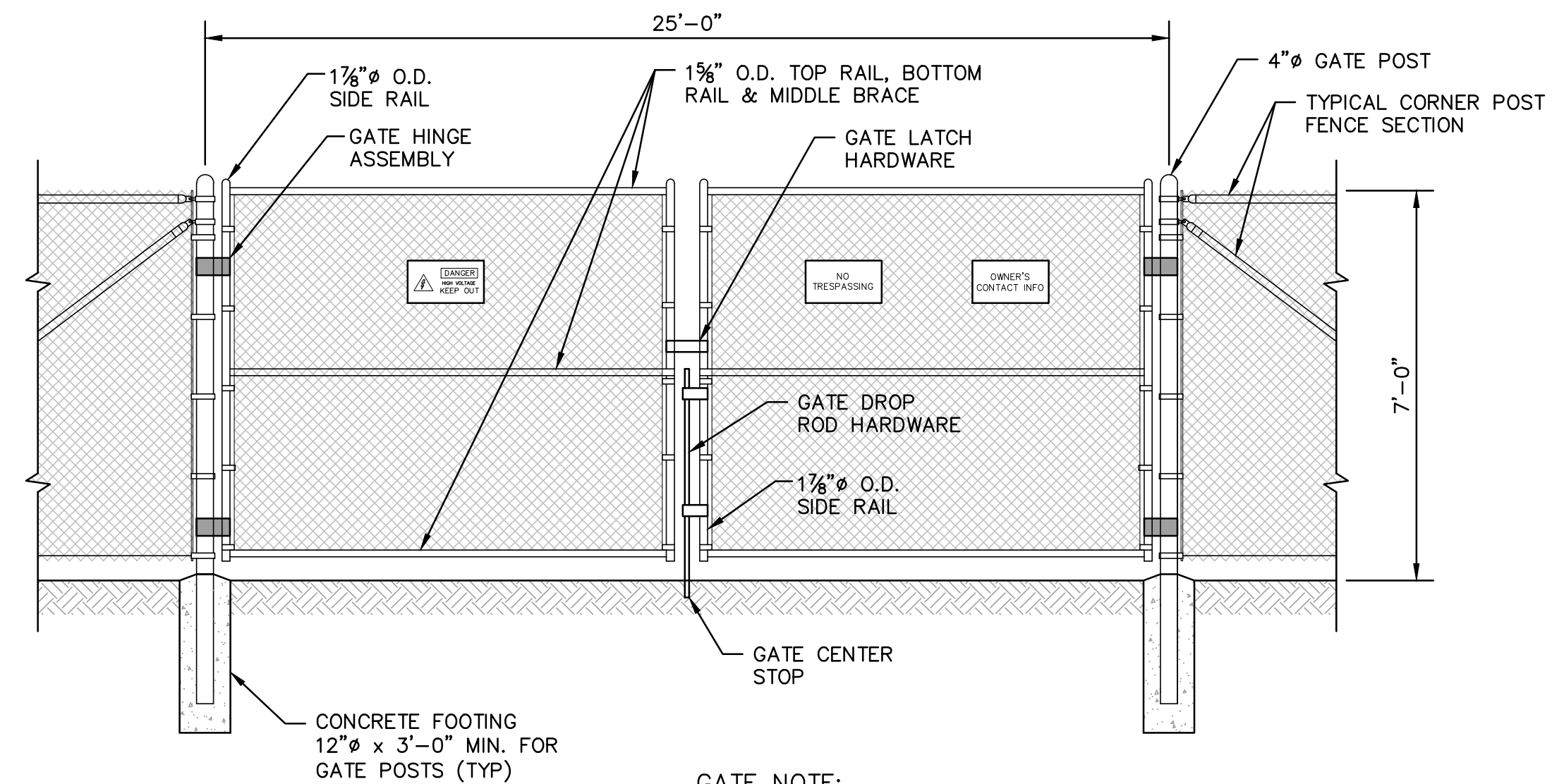
TYPICAL PROFILE VIEW



TYPICAL ELEVATION VIEW FROM FRONT (NORTH-FACING)

PERIMETER SECURITY FENCE DETAIL

SCALE: NONE



GATE NOTE:

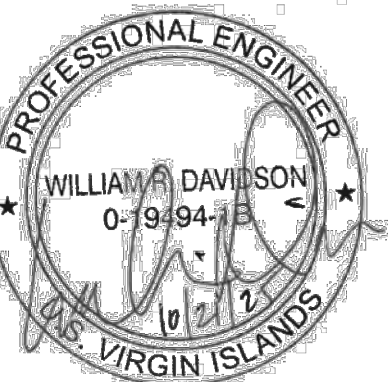
1. REFER TO ELECTRICAL DRAWINGS FOR FINAL FENCE DETAILS AND GROUNDING REQUIREMENTS. THE ELECTRICAL PLANS SHALL GOVERN IN THE CASE OF ANY DISCREPANCIES BETWEEN THE DRAWINGS.

TYPICAL SOLAR RACKING ASSEMBLY DETAIL

SCALE: NONE

25' WIDE ACCESS GATE DETAIL

SCALE: NONE



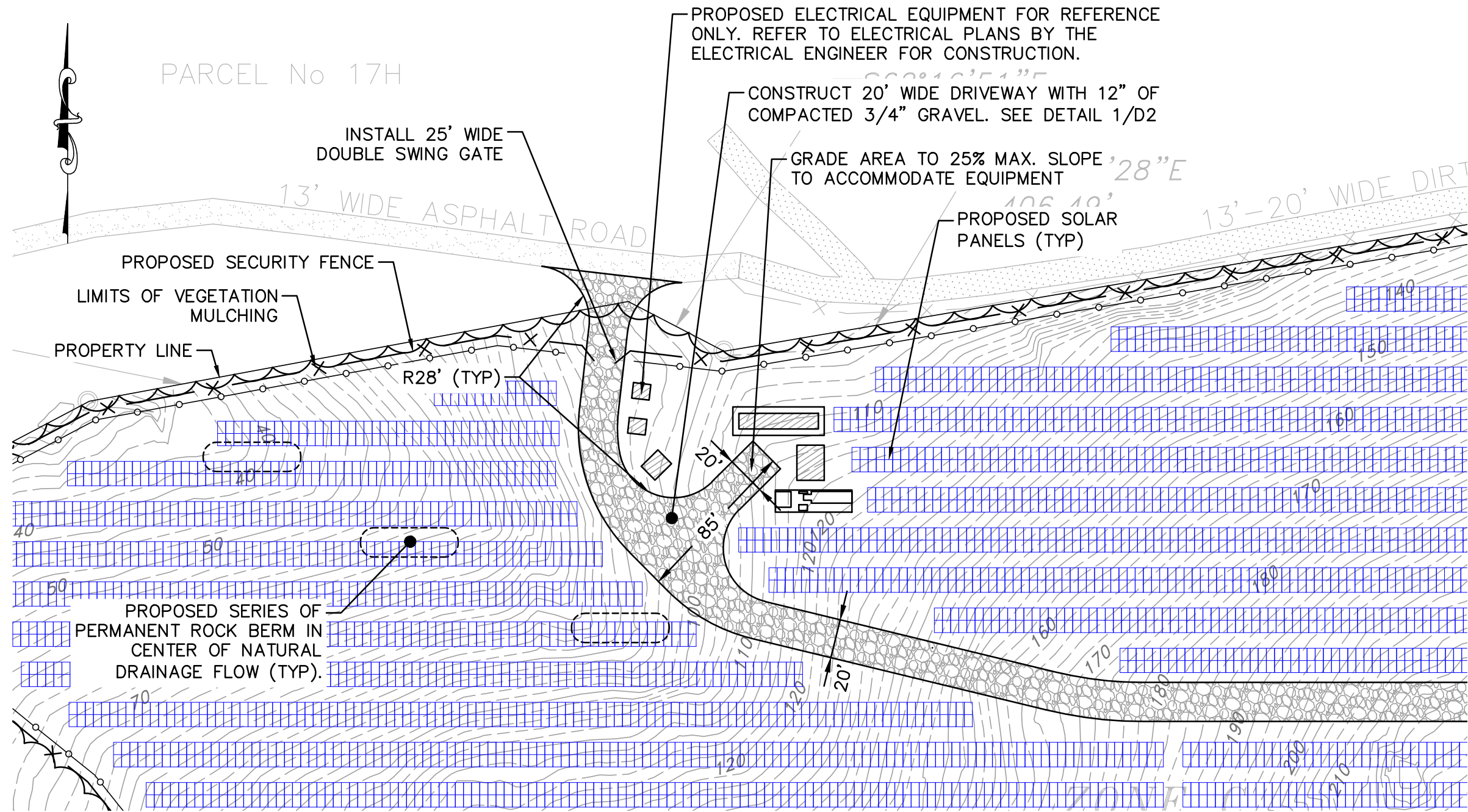
NO.	REV.	DESCRIPTION	DATE
1	ISSUED FOR DPNR STT C2M COMMITTEE REVIEW AND APPROVAL	10/30/25	
2	ISSUED FOR DPNR & DPW PERMITTING - NOT FOR CONSTRUCTION	10/15/25	

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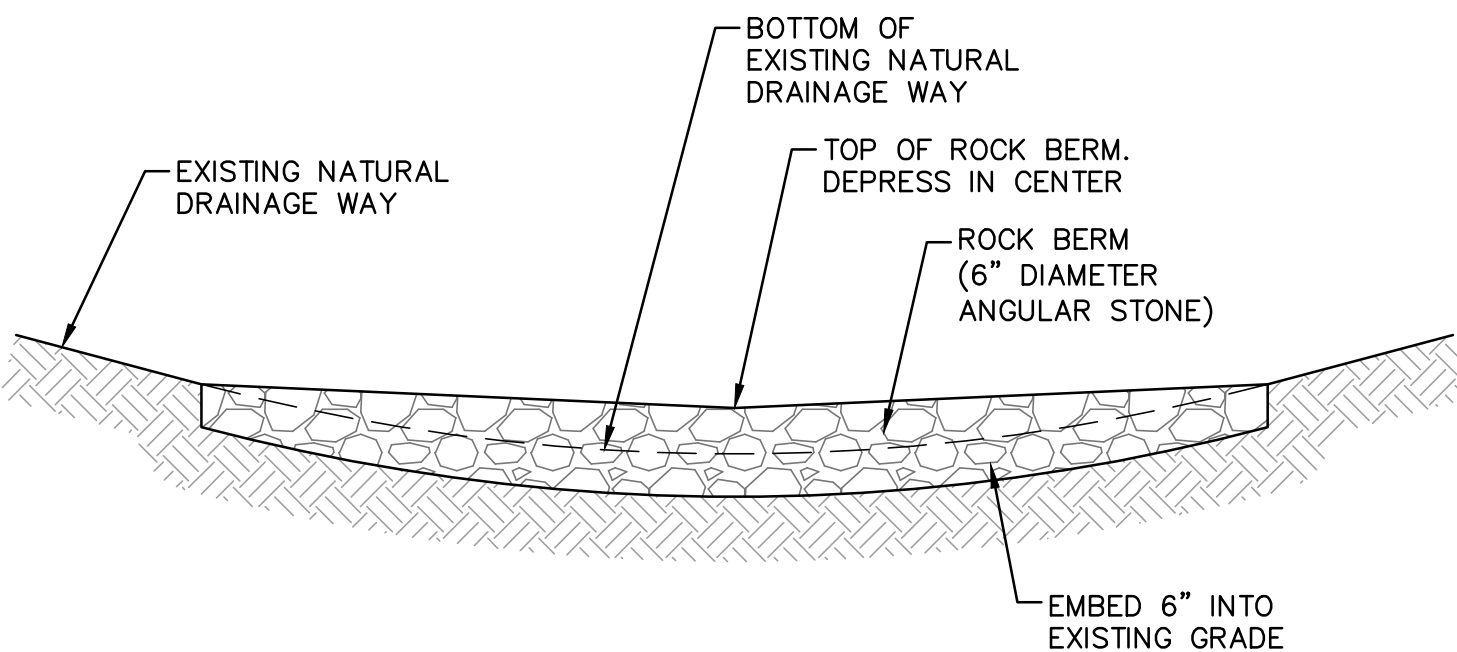
95 E. Mitchell-Hamrick Road Oviedo, FL 32765 (407) 380-1919 www.hoyletanner.com	DESIGNED BY	SES
HOYLE TANNER	DATE:	SEPTEMBER 19, 2024
SCALE: AS SHOWN		

APPLICANT	STB SOLAR LLC A VIELECTRON LLC COMPANY 5000 EST ENIGHER STA 4A PMB 146 SAINT JOHN, VI 00830
PROJECT	PROPOSED SOLAR ENERGY FACILITY BOYD/17 REMANDER ESTATE BOYD/1 SAINT THOMAS, VI 00804

CONSTRUCTION DETAILS 1
C8
PROJECT NO. 23.141001.00
SHEET 8 OF 9



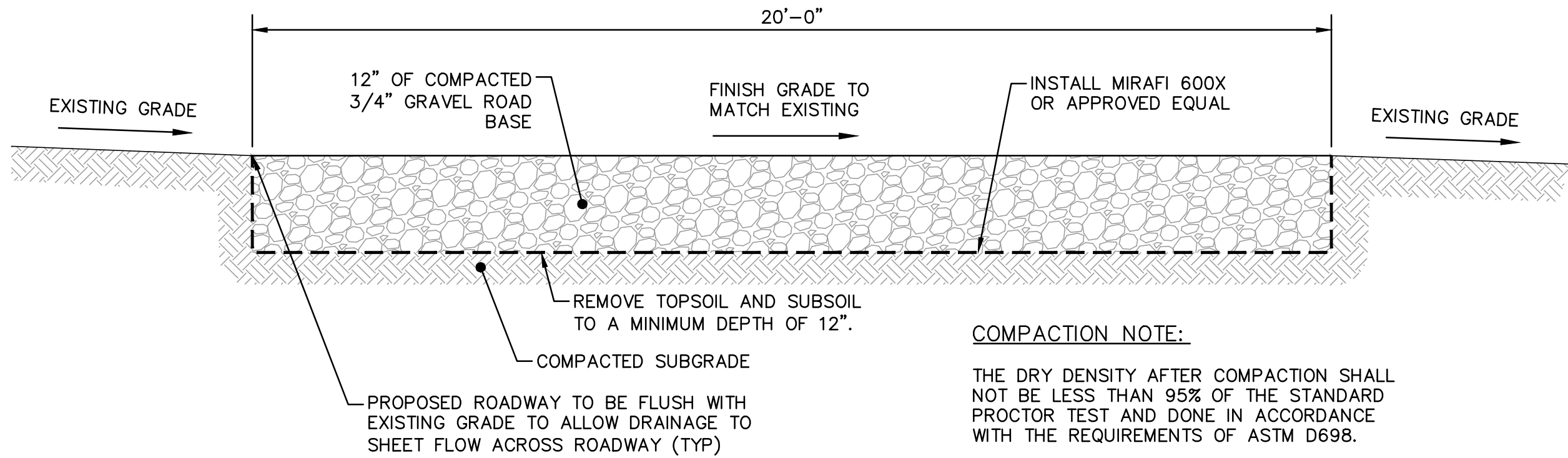
1
C9 DRIVEWAY 1 DETAIL PLAN
SCALE: 1" = 60'



ROCK BERM NOTES:

- REFER TO PLANS FOR APPROXIMATE LOCATION OF ROCK BERMS.
- THE CONTRACTOR SHALL COORDINATE WITH THE DESIGN ENGINEER IN THE FIELD ON THE FINAL LOCATION AND WIDTH OF THE PROPOSED ROCK BERMS. THE DESIGN INTENT IS TO INSTALL THE BERMS IN THE CENTER OF THE NATURAL DRAINAGE FLOW PATHS WITHIN THE SOLAR FIELD TO SLOW AND DISSIPATE STORMWATER RUNOFF.

3
C9 PERMANENT ROCK BERM SERIES
SCALE: NONE



2
C9 TYPICAL ACCESS DRIVEWAY SECTION
SCALE: NONE



REV.	DESCRIPTION	DATE
1	ISSUED FOR DPNR & DPW PERMITTING - NOT FOR CONSTRUCTION	10/15/25
2	ISSUED FOR DPNR STT CZM COMMITTEE REVIEW AND APPROVAL	10/30/25

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SCALE: AS SHOWN

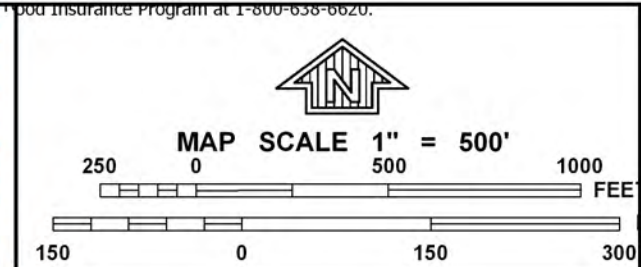
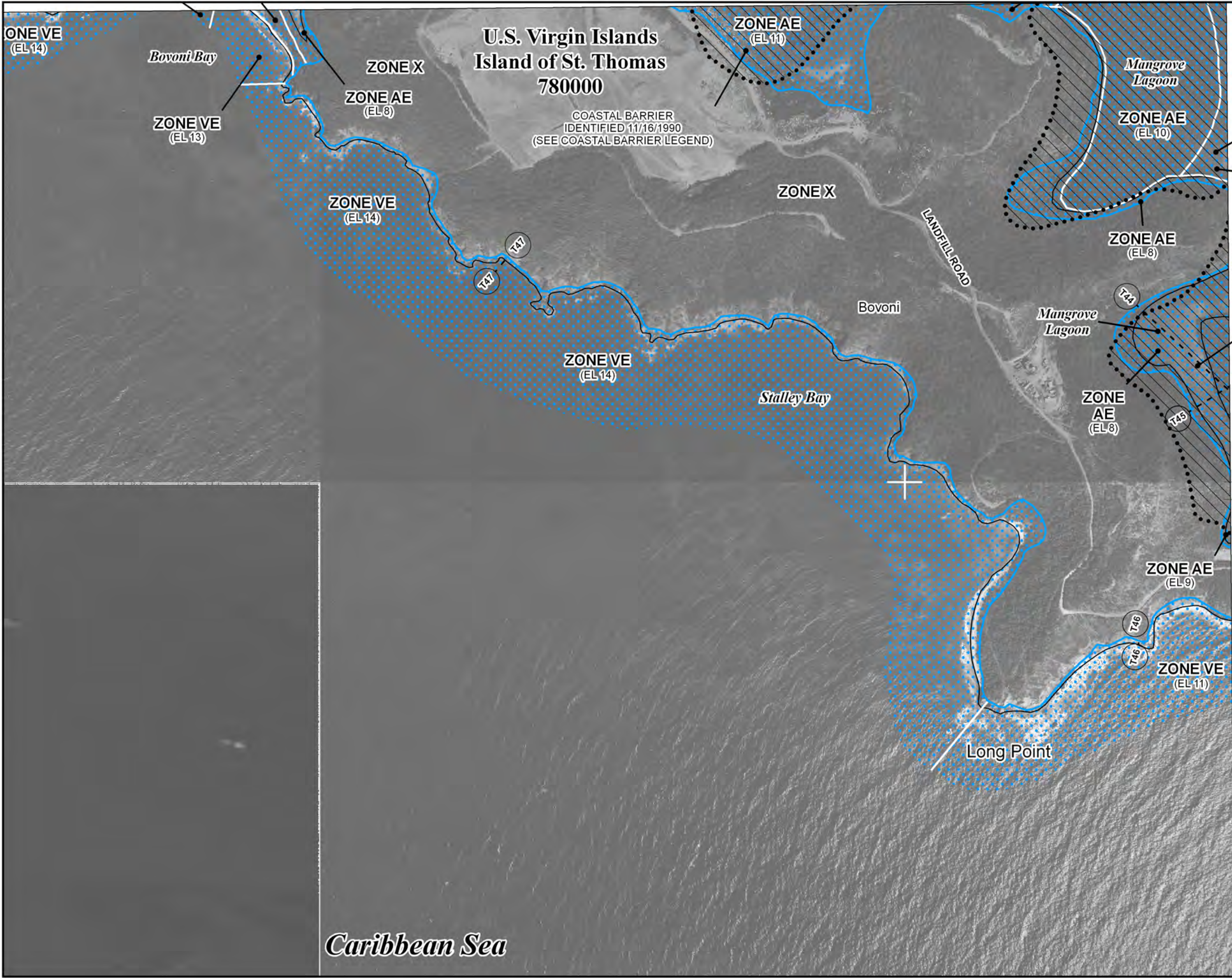
DATE: SEPTEMBER 19, 2024

DESIGNED BY
SES

APPLICANT STB SOLAR LLC A VIELECTRON LLC COMPANY 5000 EST ENIGHER ST. 4A PMB 146 SAINT JOHN, VI 00830	PROJECT PROPOSED SOLAR ENERGY FACILITY BOYD/17 REMANDER ESTATE BOYD/1 SAINT THOMAS, VI 00804
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Attachment H – Required Maps and Plans





NFIP

PANEL 0043G

FIRM
FLOOD INSURANCE RATE MAP

U.S. VIRGIN ISLANDS

PANEL 43 OF 94
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
U.S. VIRGIN ISLANDS	780000	0043	G

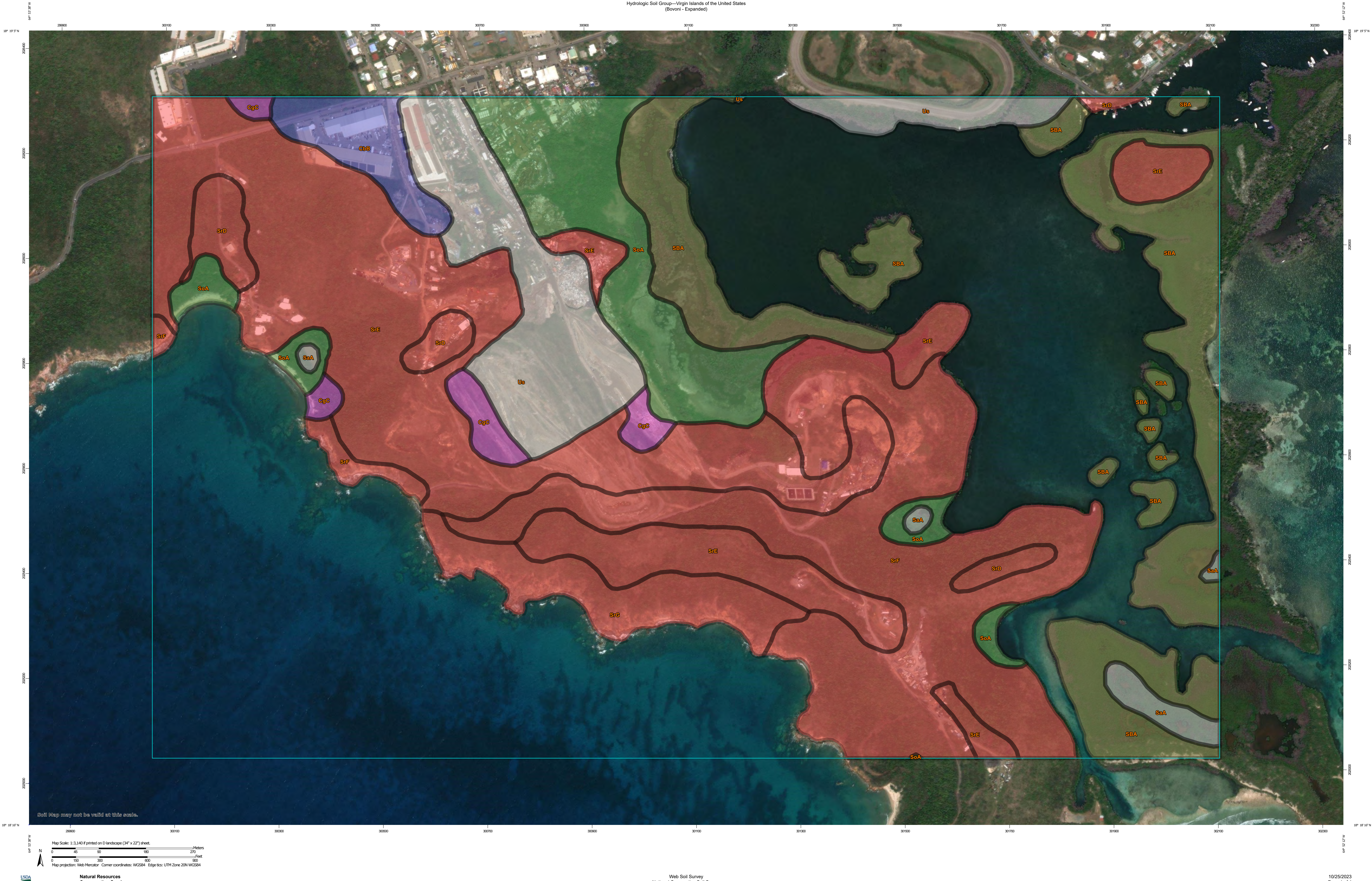
- NOTE -
THIS MAP INCLUDES COASTAL BARRIER RESOURCES SYSTEM BOUNDARIES ESTABLISHED UNDER THE COASTAL BARRIER RESOURCES ACT OF 1982 AND/OR SUBSEQUENT LEGISLATION.
Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
7800000043G

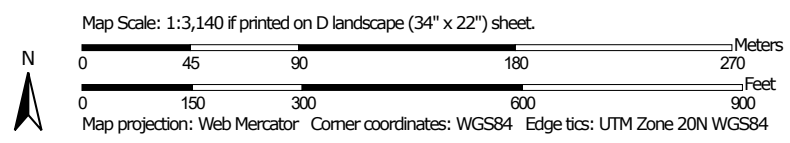
MAP REVISED
APRIL 16, 2007

Federal Emergency Management Agency

This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at <https://msc.fema.gov>.



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: Virgin Islands of the United States
Survey Area Data: Version 5, Sep 13, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 2016—Feb 16, 2023

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CbB	Cinnamon Bay loam, 0 to 5 percent slopes, occasionally flooded	B	9.7	1.5%
CgC	Cinnamon Bay gravelly loam, 5 to 12 percent slopes, occasionally flooded	A	6.5	1.0%
SaA	Salt flats, ponded		4.5	0.7%
SBA	Sandy Point and Sugar Beach soils, 0 to 2 percent slopes, frequently flooded	C/D	64.5	10.1%
SoA	Solitude gravelly fine sandy loam, 0 to 2 percent slopes, frequently flooded	A/D	37.2	5.8%
SrD	Southgate-Rock outcrop complex, 12 to 20 percent slopes	D	9.7	1.5%
SrE	Southgate-Rock outcrop complex, 20 to 40 percent slopes	D	110.3	17.3%
SrF	Southgate-Rock outcrop complex, 40 to 60 percent slopes	D	79.4	12.5%
SrG	Southgate-Rock outcrop complex, 60 to 90 percent slopes	D	16.0	2.5%
Us	Ustorthents		38.4	6.0%
Totals for Area of Interest			637.5	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Attachment I – Hydrology Report





Hydrology Report

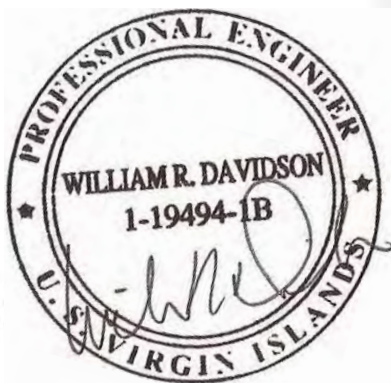
For a Proposed Solar Energy Facility
with Battery Storage

Bovoni 17 Remainder
Estate Bovoni
St. Thomas, U.S. Virgin Islands

HTA Project No. 23.141001.00

October 2025

Applicant:
STB Solar LLC
A Vlelectron LLC Company



Trusted Experts | Innovative Results

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Introduction

Project Location

The proposed solar energy facility is located within Tier I (coastal zone) at parcel 17 Remainder Bovoni, Estate Bovoni near the eastern side of St. Thomas, south of Landfill Road (See below image). The total parcel (109402 010100) area is 30.95 +/- acres, where 23.51 +/- acres is anticipated to be disturbed.



FEMA Flood Hazard

The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Number FM7800000043G, effective date April 16, 2007, covers the project site. The site is predominately located within flood zone "X", with the 100-year flood zone "VE" present in the southern part of the site near the coastline (see below image). No wetlands are present on-site.



ent of hydrologic and hydraulic models at the project
merican Land Title Association (ALTA) and topographic
sociates professional land surveyors in May 2024. The
project area, the shoreline, cliff line, and limits of the

Description

and mounted racking solar field system with a 10.725+/-
very energy storage system (BESS), equipment pads and
ported on 2.375-inch diameter ground screws installed
axis with each row separated by a typical 2-foot aisle.
be spaced in either 5-foot or 8-foot aisles to the north
olar panels are set at a fixed tilt of either 10- or 20-
e ground allowing grass and other various open space

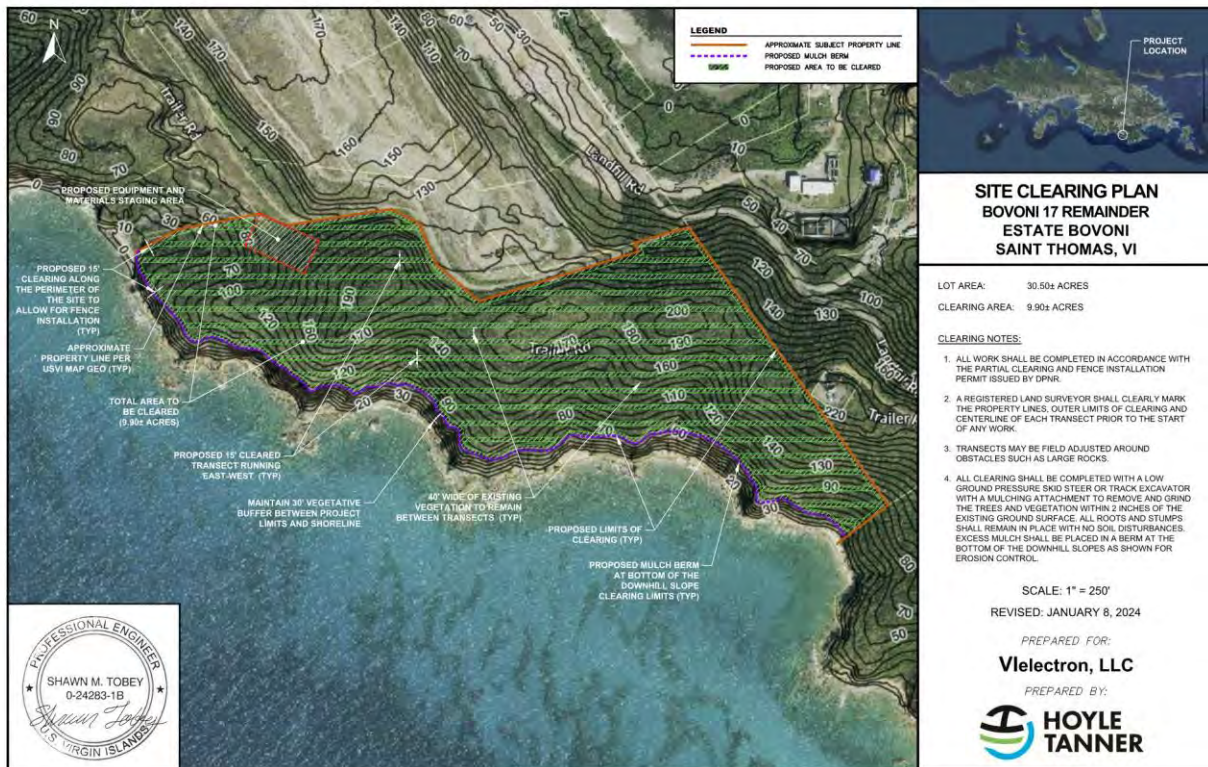
ordance to an approved Permit Letter Request with a
r with a mulching attachment to remove and grind the
he existing ground surface to preserve all topsoil and

Project Description

The project consists of the construction of a ground mounted racking solar field system with a 10.725+/- MWdc (10 MWac) capacity including on-site battery energy storage system (BESS), equipment pads and access driveways. The racking system will be supported on 2.375-inch diameter ground screws installed into the ground in rows running in the east-west axis with each row separated by a typical 2-foot aisle. Depending on the existing slopes, some rows will be spaced in either 5-foot or 8-foot aisles to the north where the site experiences reverse slopes. The solar panels are set at a fixed tilt of either 10- or 20-degrees that will rest a minimum 24-inches above ground allowing grass and other various open space vegetation to grow underneath.

The site is currently being partially cleared in accordance to an approved Permit Letter Request with a low ground pressure skid steer or track excavator with a mulching attachment to remove and grind the existing trees and vegetation within 2-inches of the existing ground surface to preserve all topsoil and

allow existing roots to remain, where the majority of the mulch is left in place while any excess mulch is placed in a perimeter berm along the downhill slopes toward the coast (see below image). Prior to construction of the solar racking system, the remaining project area will be cleared using the current clearing methods and the security fence will be installed.



Hydrologic Analysis

Rainfall

The runoff analysis is based on the 2, 10, 25, and 100-year storm events using the SCS Technical Release 55 (TR-55) method with Type-II, 24-hour storms. Rainfall precipitation data was obtained from National Oceanic and Atmospheric Administration's (NOAA) National Weather Service Precipitation Frequency Data Server (**Appendix A**) based on the project location. A summary of the rainfall events is shown in the table below.

STORM EVENT	24-HOUR RAINFALL (Inches)
2-Year Storm	3.82
10-Year Storm	7.30
25-Year Storm	9.58
100-Year Storm	13.50

Soils

Existing site soil information was taken from the Natural Resources Conservation Service's (NRCS). The NRCS Web Soil Survey (**Appendix B**) classifies the types of soils found within the watershed according to hydrologic soils group (HSG): A, B, C or D. The site consists entirely of HSG D soils, as the United States Virgin Island of Saint Thomas is known for having volcanic, rocky, soils.

Hydrographs

The overall pre-development and post-development site hydrographs were calculated utilizing the method detailed in TR-55 "*Urban Hydrology for Small Watersheds*" as published by the United States Department of Agriculture Soil Conservation Service, "SCS", and revised in June of 1986.

The site has a natural ridgeline to the north that runs in the east-west direction where the majority of the site drains in the southern direction towards the coast, while portions of the site drain north towards an existing ditch that runs along the southern side of the existing paved road. The entire site eventually discharges into the Caribbean Sea.

To effectively analysis the on-site hydrologic and hydraulic conditions of the project, the site has been divided into three (3) watersheds – due to the natural ridges and valleys – each with a designated design point (assumed critical stormwater discharge point). Watershed 1 drains primarily to the north into the existing ditch running along the south side of the existing paved road, eventually into the Sea. Watershed 2 drains into an existing valley central to the site and eventually into the Sea. Watershed 3 drains into an existing valley on the east side of the site and eventually into the Sea. The watershed delineations for the project area do not change from pre-development to post-development conditions.

Modeling

The hydrologic analysis was performed using the HydroCAD computer program which is based on the NRCS Technical Release 20 (TR-20) Model for Project Formulation Hydrology. Due to the existing grounds and topography, combination of segments of sheet flow and shallow concentrated flow methods were used to determine the time of concentration for each watershed.

For this analysis, rainfall depth was uniformly imposed on the pre- and post-development watersheds over a 24-hour period and then converted to a peak runoff volume using a Runoff Curve Number (CN), which is determined based on the soil types and HSG classified by the NRCS Web Soil Survey. The lower or higher the CN the more permeable or impervious the ground conditions are, respectively. Said volume is transformed into a hydrograph utilizing the Unit Hydrograph Theory and routing procedures, which are dependent on the travel time through each watershed.

Pre-Development Conditions

The existing site has been extensively disturbed, previously used for agricultural purposes, and is currently vacant. The site has been partially cleared and mulched in accordance with an approved Permit Letter Request but was previously underdeveloped and overgrown with woods and grass, which have been used as the pre-development conditions for the purpose of this analysis. The following land covers have been used for the HSG D soils identified on-site: “Artificial desert landscape”, “Dirt roads”, “Impervious area”, “Paved parking”, and “Woods/grass comb., Good”. Please see Pre-Development Drainage Map (**Appendix C**).

The site contains a few areas of impervious cover (approximately 5,170 +/- SF) from a paved driveway/parking lot, miscellaneous concrete pads, and paved road to the site that runs along the northern side of the site. For the purposes of this analysis, the area between the property boundary and the existing paved road was considered desert landscape while the remaining impervious cover was considered paved area.

Design Point 1 (DP1) is located on the northern and western side of the site and receives runoff from approximately 12.76 acres and eventually discharges to the Sea. Design Point 2 (DP2) is located central to the site and receives runoff from approximately 8.78 acres and eventually discharges to the Sea. Design Point 3 (DP3) is located on the eastern side of the site and receives runoff from approximately 6.64 acres and eventually discharges to the Sea. Due to the existing volcanic soils and topography, sheet flow was assumed for the first 300 feet and eventually transitions to a shallow concentrated flow through the existing wood/brush conditions in naturally occurring valleys for all three (3) design points.

The analysis criteria used for the SCS TR-20 hydraulic analysis of the pre-development conditions are as follows:

- Storm Event Frequency: 2, 10, 25, and 100-year, 24-Hour Storms
- Runoff Coefficients (CN)

Impervious, HSG D	= 98
Paved area, HSG D	= 98
Artificial desert landscape, HSG D	= 96
Dirt roads, HSG D	= 89
Woods/grass comb., Good, HSG D	= 79

The table below provides a summary of the peak runoff rates in the pre-development conditions.

PRE-DEVELOPMENT CONDITIONS (RATES)			
	Design Point 1	Design Point 2	Design Point 3
Inflow Area	12.76 Acres	8.78 Acres	6.64 Acres
Peak Design Storm	Flow (cfs)	Flow (cfs)	Flow (cfs)
2-Year; 24-hour	27.24	18.07	15.31
10-Year; 24-hour	69.49	48.11	40.55
25-Year; 24-hour	97.68	68.38	57.54
100-Year; 24-hour	145.86	103.14	86.66

Post-Development Conditions

The proposed site is designed to utilize the existing topography and minimize the effects on the natural hydrologic and hydraulic patterns of the existing site. The proposed project will maintain the soil type, watersheds, and design points consistent with the pre-development conditions. Please see Post-Development Drainage Map (**Appendix D**).

The site may contain steep slopes that may require steps and/or cut ins to install the proposed solar system that will only be constructed on an as needed basis to reduce the overall ground disturbance of the site. Additional silt fencing may be required to control erosion during construction, and stabilization will be established before the completion of construction. Natural spray tack adhesives will be used for permanent measures to stabilize the site for any necessary stepping access paths or cut ins. Permanent rock berm series will also be installed as needed within naturally occurring drainage flow paths as an erosion control measure and help reduce the overall peak runoff rates for various storm events.

At the end of each row, all power lines used to operate the solar panels will be distributed above ground to connect the equipment pads where the low-voltage wires will run through a Class 2 Circuit (CAV) system and the high-voltage wires will run through conduits on concrete pads. No trenching or excavating is anticipated for this project further minimizing any ground disturbance to the site.

The entire site drains into the Caribbean Sea and concerns of adverse flooding are not anticipated therefore the 2022 U.S. Virgin Islands Environmental Protection Handbook (USVI EP Handbook) requirements to reduce the runoff volume for the 1-year design storm is not applicable for this project.

The proposed development will utilize dense Guinea Grass (*Megathyrsus maximus*), maintained at a 6" - 12" height, to surround the proposed racking system (both within the aisles and underneath the panels) to create a stable ground condition similar to the existing conditions. For this hydrological analysis, a land cover of ">75% Grass Cover, Good" has been used for the developed portions of the site, while the undeveloped portions will maintain the existing land covers of "Woods/grass comb., Good". The panels themselves, tilted at either a 10- or 20-degrees and raised 24" from the ground, are modelled as pervious since all groundcover below them will be stabilized grass to absorb runoff and gaps between

adjacent panels will allow water to drain freely. Below is a photo of a constructed solar site by VIElectron showing the dense stabilized Guinea grass in and around the solar modules.



The additional amounts of impervious cover (approximately 3,450 +/- SF) from the equipment pads, above ground conduit runs, battery storage, and ground screws were accounted for and were considered paved areas for the purposes of this analysis. Additional ground cover includes the proposed access drive, which was considered gravel road.

The analysis criteria used for the SCS TR-20 hydraulic analysis of the post-development conditions are as follows:

- Storm Event Frequency: 2, 10, 25, and 100-year, 24-Hour Storms
- Runoff Coefficients (CN)

Impervious, HSG D	= 98
Parked area, HSG D	= 98
Artificial desert landscape, HSG D	= 96
Gravel roads, HSG D	= 96
>75% Grass Cover, Good, HSG D	= 80
Woods/grass comb., Good, HSG D	= 79

The table below provides a summary of the peak runoff rates in the post-development conditions.

POST-DEVELOPMENT CONDITIONS (RATES)			
	Design Point 1	Design Point 2	Design Point 3
Inflow Area	12.76 Acres	8.78 Acres	6.64 Acres
Peak Design Storm	Flow (cfs)	Flow (cfs)	Flow (cfs)
2-Year; 24-hour	27.21	18.01	15.31
10-Year; 24-hour	66.40	46.77	39.61
25-Year; 24-hour	92.61	65.98	56.03
100-Year; 24-hour	137.71	98.91	83.98

Peak Runoff Analysis

Peak runoff was compared between the pre- and post-development conditions for each of the three (3) design points. As shown in the tables below and HydroCAD analysis (**Appendix E**), the small increase in impervious cover is mostly absorbed by the overall dense Guinea grass areas in and around the panels, creating a similar ground cover to the existing conditions helping to stabilize the ground and mitigate runoff. The development will generally maintain the existing grades and drainage flow patterns with minimal changes to the current topography. To further reduce the peak rate of runoff and preserve the integrity of the site from future storm event erosion, several series of permanent rock berms will be constructed where naturally occurring drainage flow paths exist on-site.

The watersheds were designed to provide peak runoff rate reductions between the pre- and post-development conditions up to the 100-year design storm for flow rate to comply with the 2022 U.S. Virgin Islands Environmental Protection Handbook (USVI EP Handbook).

Design Point 1 (DP1) has impervious areas from ground screws, access driveway and electrical equipment; while Design Point 2 (DP2) and 3 (DP3) have impervious areas from ground screws only. The site is volcanic HSG D soils, which provide little in the way of stormwater infiltration. Understanding the limited infiltration, the proposed rock berm series uses loose compacted crushed stone to help as a dispersion device while the rest of the disturbed areas of the watershed will feature dense Guinea grass which is intended to capture slow stormwater runoff and prevent erosion.

The tables below provide a summary of the control of the peak rate of runoff between the pre- and post-development conditions.

PEAK RUNOFF DESIGN POINT 1 (RATES)			
	Pre-Development	Post-Development	Difference
Peak Design Storm	Flow (cfs)	Flow (cfs)	Flow (cfs)
2-Year; 24-hour	27.24	27.21	-0.03
10-Year; 24-hour	69.49	66.40	-3.09
25-Year; 24-hour	97.68	92.61	-5.07
100-Year; 24-hour	145.86	137.71	-8.15

PEAK RUNOFF DESIGN POINT 2 (RATES)			
	Pre-Development	Post-Development	Difference
Peak Design Storm	Flow (cfs)	Flow (cfs)	Flow (cfs)
2-Year; 24-hour	18.07	18.01	-0.06
10-Year; 24-hour	48.11	46.77	-1.34
25-Year; 24-hour	68.38	65.98	-2.40
100-Year; 24-hour	103.14	98.91	-4.23

PEAK RUNOFF DESIGN POINT 3 (RATES)			
	Pre-Development	Post-Development	Difference
Peak Design Storm	Flow (cfs)	Flow (cfs)	Flow (cfs)
2-Year; 24-hour	15.31	15.31	-0.00
10-Year; 24-hour	40.55	39.61	-0.94
25-Year; 24-hour	57.54	56.03	-1.51
100-Year; 24-hour	86.66	83.98	-2.68

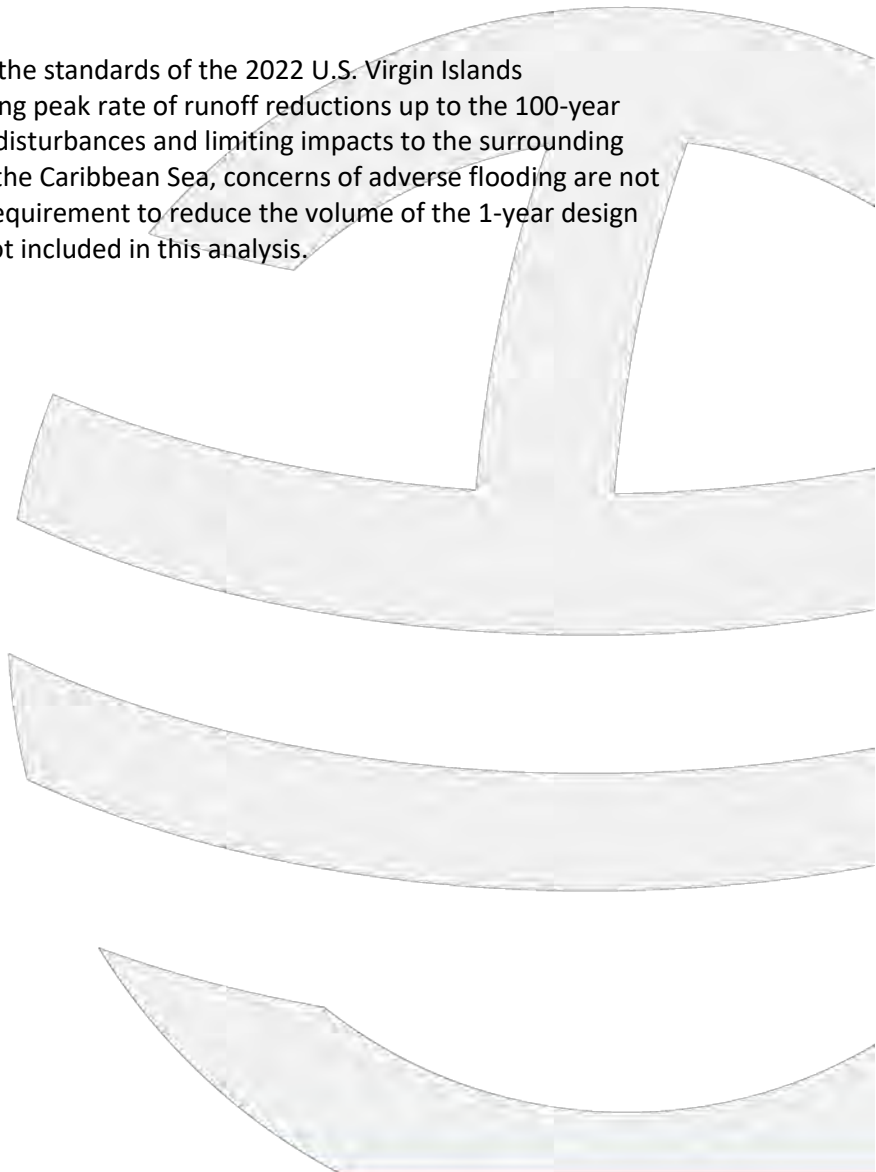
Conclusion

The project was designed to maintain existing natural soils, topography, and flow patterns. All existing vegetation within the project area will be ground flush with the existing grade with minimal root removal therefore leaving most soils in place and undisturbed. Limited grading is proposed which will allow for natural drainage patterns to be maintained.

The proposed design has minimal impervious surfaces that are typically associated with stormwater runoff. To mitigate impacts from the development, a dense Guinea grass maintained between 6-12-inches in and around the solar field will provide permanent stabilization and slow stormwater runoff. The site will also feature several permanent rock berm series to be installed in the stormwater flow paths to slow runoff and promote infiltration with the Guinea grasses.

The nature of this development does not generate stormwater pollutants typically associated with larger developments. Once constructed, the site will essentially be self-operational with limited vehicle traffic and will not use herbicides, pesticides or cleaning chemicals. Extensive perimeter erosion control measures are proposed and a detailed Stormwater Prevention Pollution Plan (SWPPP) will be implemented to prevent erosion and sediment runoff for the duration of construction until the site is permanently stabilized.

In summary, the project was designed to meet the standards of the 2022 U.S. Virgin Islands Environmental Protection Handbook by providing peak rate of runoff reductions up to the 100-year design storm, while minimizing on-site ground disturbances and limiting impacts to the surrounding properties. Due to the entire site draining into the Caribbean Sea, concerns of adverse flooding are not anticipated, therefore the USVI EP Handbook requirement to reduce the volume of the 1-year design storm is not applicable for this project and is not included in this analysis.



Appendix A – Rainfall Data





NOAA Atlas 14, Volume 3, Version 4
Location name: Southside, US Virgin Islands, VIR*
Latitude: 18.3096°, Longitude: -64.8846°
Elevation: 203 ft**
* source: ESRI Maps
** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aerals](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.270 (0.246-0.339)	0.377 (0.323-0.438)	0.481 (0.417-0.547)	0.550 (0.475-0.629)	0.635 (0.540-0.734)	0.696 (0.584-0.816)	0.756 (0.628-0.900)	0.814 (0.665-0.980)	0.891 (0.711-1.09)	0.950 (0.743-1.18)
10-min	0.369 (0.337-0.464)	0.515 (0.442-0.599)	0.657 (0.569-0.748)	0.752 (0.649-0.860)	0.868 (0.739-1.00)	0.952 (0.798-1.12)	1.03 (0.858-1.23)	1.11 (0.909-1.34)	1.22 (0.972-1.49)	1.30 (1.02-1.61)
15-min	0.474 (0.432-0.595)	0.661 (0.567-0.768)	0.843 (0.731-0.959)	0.965 (0.833-1.10)	1.11 (0.948-1.29)	1.22 (1.02-1.43)	1.33 (1.10-1.58)	1.43 (1.17-1.72)	1.56 (1.25-1.91)	1.67 (1.30-2.07)
30-min	0.759 (0.692-0.953)	1.06 (0.908-1.23)	1.35 (1.17-1.54)	1.54 (1.33-1.77)	1.78 (1.52-2.06)	1.96 (1.64-2.29)	2.12 (1.76-2.53)	2.29 (1.87-2.75)	2.50 (2.00-3.06)	2.67 (2.09-3.32)
60-min	1.13 (1.03-1.41)	1.57 (1.35-1.82)	2.00 (1.74-2.28)	2.29 (1.98-2.62)	2.64 (2.25-3.06)	2.90 (2.43-3.40)	3.15 (2.62-3.75)	3.39 (2.77-4.08)	3.71 (2.96-4.54)	3.96 (3.10-4.92)
2-hr	1.41 (1.32-1.85)	2.04 (1.73-2.41)	2.70 (2.31-3.13)	3.16 (2.69-3.70)	3.76 (3.13-4.48)	4.21 (3.42-5.12)	4.67 (3.73-5.76)	5.12 (3.99-6.45)	5.75 (4.34-7.44)	6.23 (4.57-8.25)
3-hr	1.74 (1.46-2.07)	2.28 (1.94-2.69)	3.03 (2.59-3.49)	3.54 (3.02-4.11)	4.20 (3.51-4.97)	4.70 (3.84-5.65)	5.21 (4.19-6.38)	5.72 (4.51-7.13)	6.42 (4.91-8.19)	6.97 (5.18-9.08)
6-hr	2.10 (1.73-2.55)	2.78 (2.30-3.37)	3.89 (3.23-4.61)	4.71 (3.88-5.62)	5.82 (4.65-7.14)	6.70 (5.20-8.44)	7.61 (5.74-9.82)	8.57 (6.29-11.2)	9.91 (6.98-13.5)	11.0 (7.48-15.5)
12-hr	2.45 (1.97-3.04)	3.30 (2.66-4.12)	4.82 (3.88-5.88)	6.00 (4.75-7.44)	7.67 (5.86-9.78)	9.02 (6.66-11.8)	10.4 (7.44-14.1)	12.0 (8.26-16.5)	14.1 (9.29-20.2)	15.8 (10.0-23.2)
24-hr	2.82 (2.35-3.40)	3.82 (3.20-4.61)	5.73 (4.79-6.83)	7.30 (6.08-8.68)	9.58 (7.88-11.3)	11.5 (9.34-13.6)	13.5 (10.9-16.0)	15.7 (12.5-18.6)	18.9 (14.8-22.5)	21.5 (16.6-25.6)
2-day	3.61 (3.00-4.35)	4.92 (4.09-5.92)	7.33 (6.10-8.73)	9.24 (7.64-11.0)	11.9 (9.78-14.1)	14.1 (11.4-16.7)	16.4 (13.2-19.4)	18.9 (14.9-22.4)	22.3 (17.4-26.6)	25.0 (19.4-29.9)
3-day	3.77 (3.11-4.58)	5.15 (4.25-6.24)	7.67 (6.34-9.20)	9.65 (7.92-11.5)	12.4 (10.1-14.8)	14.7 (11.8-17.5)	17.1 (13.5-20.4)	19.6 (15.4-23.5)	23.1 (17.9-27.8)	25.9 (19.9-31.2)
4-day	3.92 (3.23-4.80)	5.37 (4.42-6.56)	8.00 (6.58-9.67)	10.1 (8.20-12.1)	12.9 (10.4-15.5)	15.3 (12.2-18.4)	17.7 (13.9-21.4)	20.3 (15.8-24.5)	23.9 (18.4-29.0)	26.8 (20.4-32.6)
7-day	4.47 (3.64-5.54)	6.12 (4.98-7.57)	9.23 (7.49-11.3)	11.7 (9.43-14.2)	15.3 (12.1-18.4)	18.2 (14.2-22.0)	21.3 (16.5-25.8)	24.6 (18.9-29.9)	29.4 (22.2-35.8)	33.2 (24.7-40.7)
10-day	4.92 (4.02-6.07)	6.72 (5.49-8.27)	9.98 (8.12-12.1)	12.5 (10.1-15.1)	16.2 (12.9-19.5)	19.1 (15.1-23.0)	22.2 (17.4-26.8)	25.5 (19.8-30.8)	30.2 (23.0-36.6)	34.0 (25.5-41.4)
20-day	6.52 (5.45-7.77)	8.74 (7.32-10.4)	12.3 (10.3-14.5)	15.0 (12.5-17.6)	18.7 (15.4-21.9)	21.6 (17.7-25.3)	24.6 (20.1-28.9)	27.7 (22.4-32.6)	32.0 (25.5-37.8)	35.4 (27.9-41.9)
30-day	8.14 (6.89-9.51)	10.8 (9.12-12.6)	14.4 (12.2-16.8)	17.1 (14.5-19.8)	20.6 (17.3-23.9)	23.4 (19.5-27.0)	26.1 (21.7-30.3)	28.9 (23.9-33.6)	32.8 (26.8-38.3)	36.1 (29.3-42.2)
45-day	10.3 (8.86-11.8)	13.4 (11.6-15.3)	17.3 (14.9-19.7)	20.1 (17.3-22.9)	23.7 (20.3-27.0)	26.5 (22.6-30.2)	29.2 (24.8-33.4)	32.0 (27.0-36.6)	35.6 (29.8-41.0)	38.5 (32.0-44.4)
60-day	11.4 (9.95-13.0)	14.8 (12.9-16.8)	18.9 (16.5-21.5)	22.0 (19.1-24.8)	25.9 (22.4-29.3)	28.9 (24.9-32.7)	31.9 (27.2-36.1)	34.9 (29.6-39.6)	38.9 (32.7-44.3)	41.9 (35.0-48.0)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

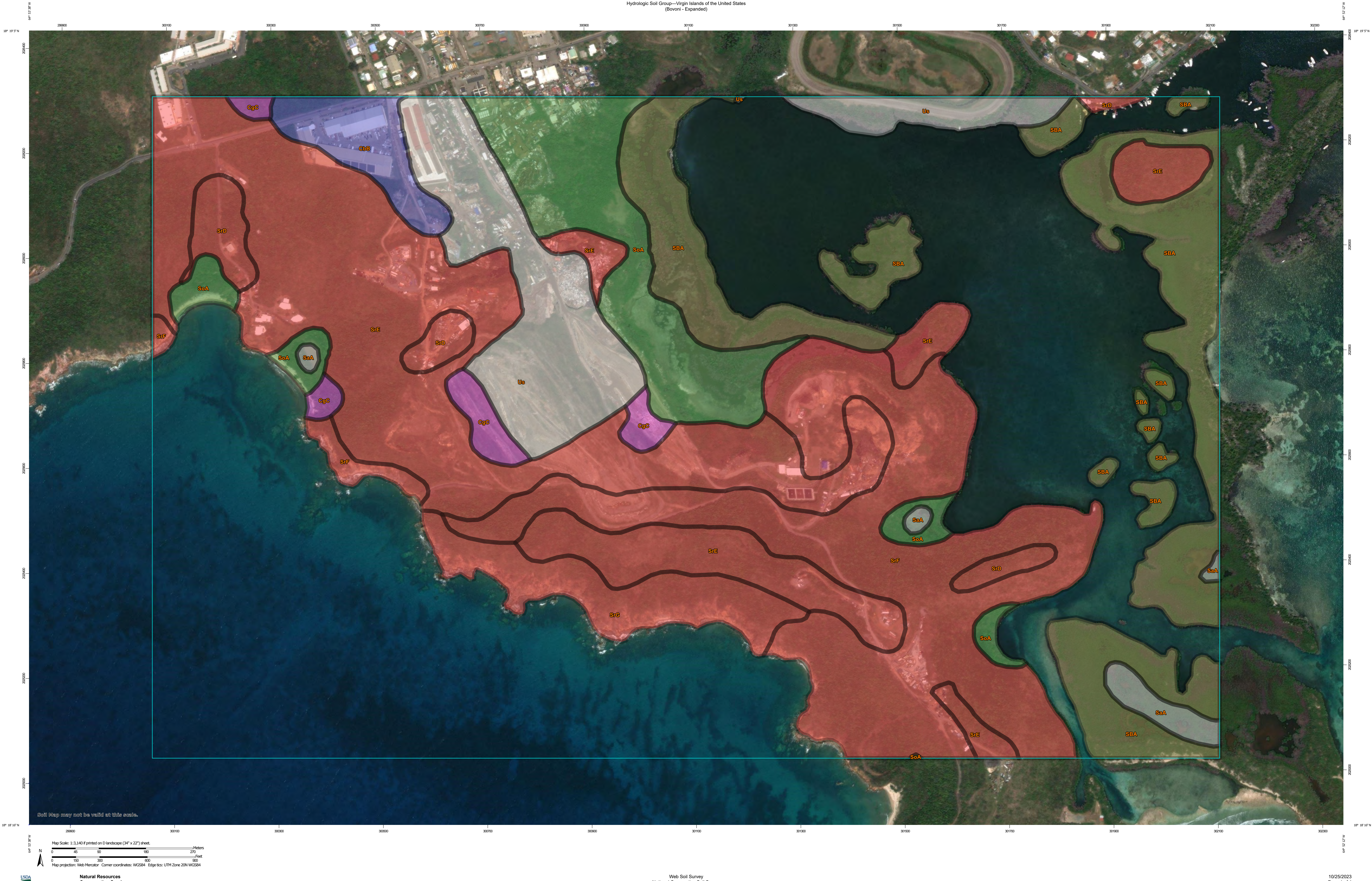
Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

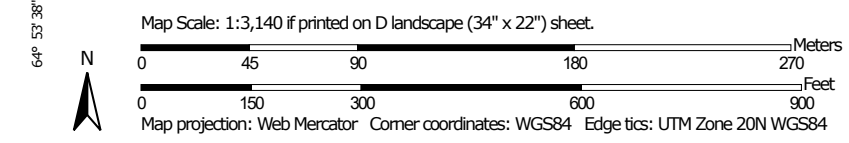
PF graphical

Appendix B – NRCS Web Soil Survey





Soil Map may not be valid at this scale.



Hydrologic Soil Group—Virgin Islands of the United States
(Bovoni - Expanded)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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: Virgin Islands of the United States
Survey Area Data: Version 5, Sep 13, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jan 1, 2016—Feb 16, 2023

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CbB	Cinnamon Bay loam, 0 to 5 percent slopes, occasionally flooded	B	9.7	1.5%
CgC	Cinnamon Bay gravelly loam, 5 to 12 percent slopes, occasionally flooded	A	6.5	1.0%
SaA	Salt flats, ponded		4.5	0.7%
SBA	Sandy Point and Sugar Beach soils, 0 to 2 percent slopes, frequently flooded	C/D	64.5	10.1%
SoA	Solitude gravelly fine sandy loam, 0 to 2 percent slopes, frequently flooded	A/D	37.2	5.8%
SrD	Southgate-Rock outcrop complex, 12 to 20 percent slopes	D	9.7	1.5%
SrE	Southgate-Rock outcrop complex, 20 to 40 percent slopes	D	110.3	17.3%
SrF	Southgate-Rock outcrop complex, 40 to 60 percent slopes	D	79.4	12.5%
SrG	Southgate-Rock outcrop complex, 60 to 90 percent slopes	D	16.0	2.5%
Us	Ustorthents		38.4	6.0%
Totals for Area of Interest			637.5	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

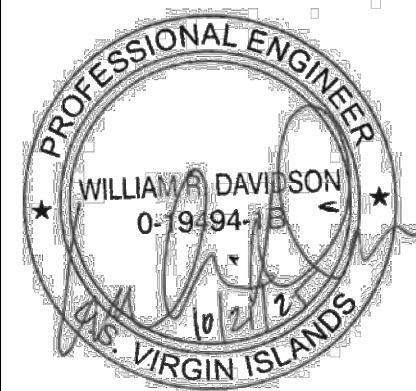
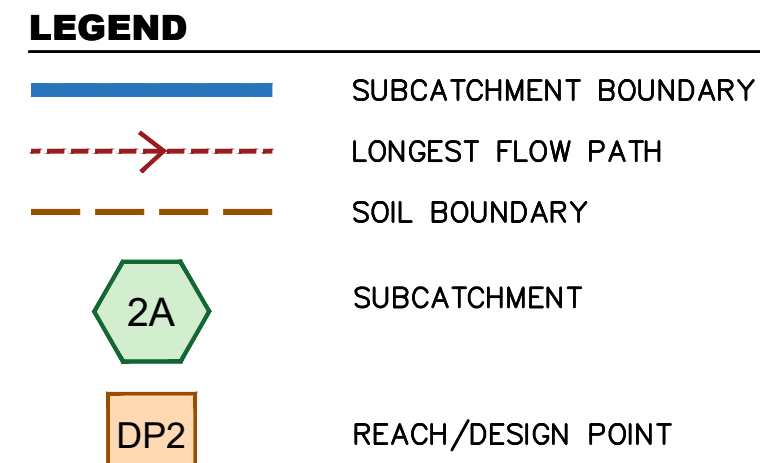
Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

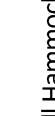
Appendix C – Pre-Development Watershed Map





2	ISSUED FOR DPNR STT C2M COMMITTEE REVIEW AND APPROVAL	10/30/25
1	ISSUED FOR DPNR & DPW PERMITTING – NOT FOR CONSTRUCTION	10/15/25
REV.	REVISION DESCRIPTION	DATE

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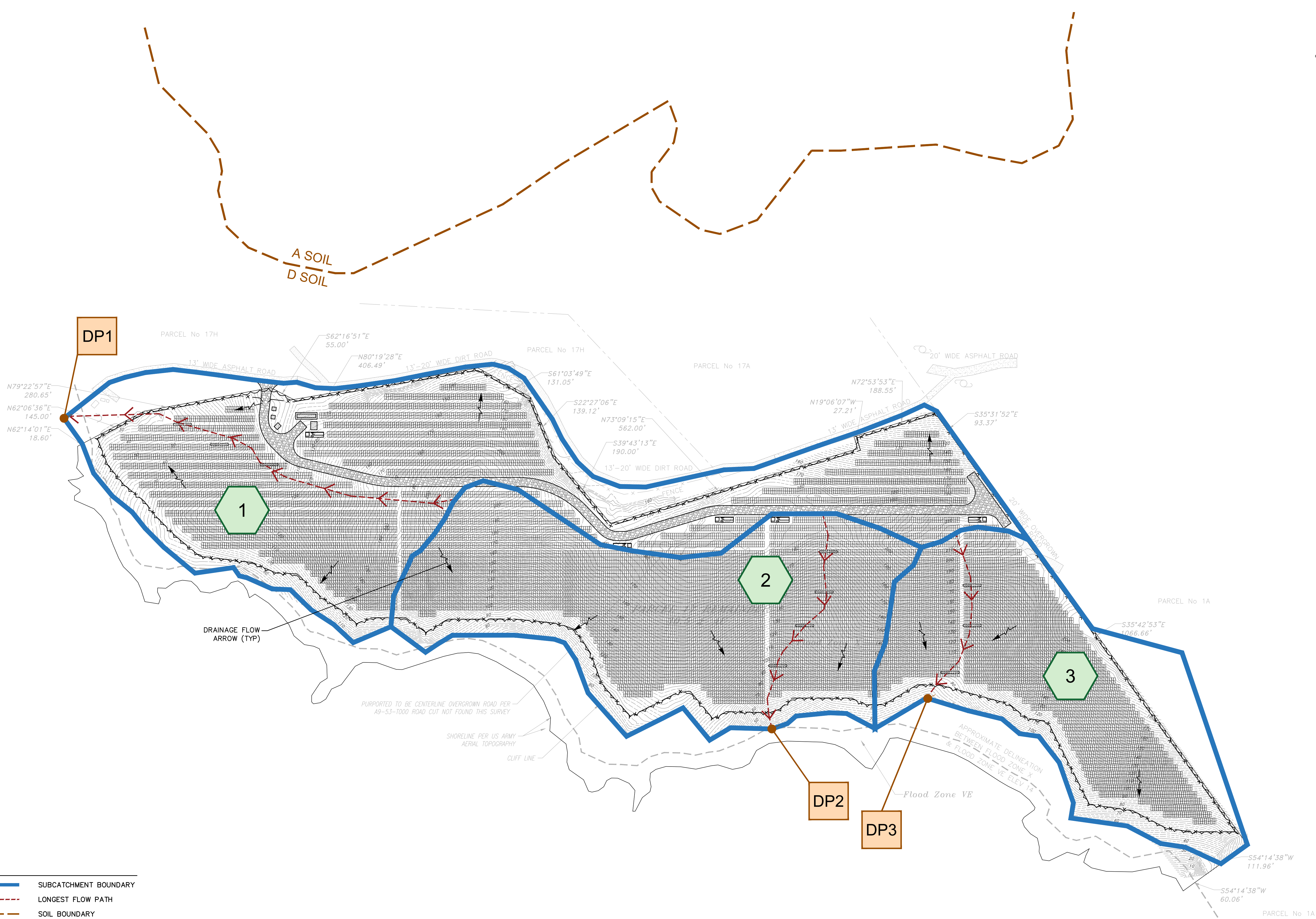
	HOYLE TANNER	95 E. Mitchell-Hammond Road Suite 200 Oviedo, FL 32765 (407) 380-1919 www.hoyletanner.com
SCALE: AS SHOWN	DATE: SEPTEMBER 19, 2024	DESIGNED: SESS

APPLICANT	STB SOLAR LLC A VELECTRON LLC COMPANY 5000 EST. ENIGHED, STA 4A, PMB 146 SAINT JOHN, VI 00830
PROJECT	PROPOSED SOLAR ENERGY FACILITY BOVONI 17 REMAINDER ESTATE BOVONI SAINT THOMAS, VI 00804

PRE-DEVELOPMENT
WATERSHED MAP
DR1
PROJECT NO. 23.141001.00
SHEET 1 OF 2

Appendix D – Post-Development Watershed Map





LEGEND

- SUBCATCHMENT BOUNDARY
- LONGEST FLOW PATH
- SOIL BOUNDARY
- SUBCATCHMENT
- REACH/DESIGN POINT

PROFESSIONAL ENGINEER

WILLIAM A. DAVIDSON

0-9494-1

U.S. VIRGIN ISLANDS

10/30/25

10/15/25

DATE

2

1

REV.

ISSUED FOR DPNR STT CZM COMMITTEE REVIEW AND APPROVAL

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Oviedo, FL 32765
(407) 380-1919
www.hoyletanner.com

**HOYLE
TANNER**

DATE:
SEPTEMBER 19, 2024

SCALE:
AS SHOWN

APPLICANT

STB SOLAR LLC
A VIELECTRON LLC COMPANY
5000 EST ENGLISH ST. 4A, PMB 146
SAINT JOHN, VI 00830

PROJECT

PROPOSED SOLAR ENERGY FACILITY
BOVONI 17 REMAINDER
ESTATE BOVONI
SAINT THOMAS, VI 00804

POST-DEVELOPMENT
WATERSHED MAP

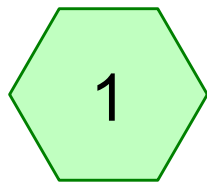
DR2

PROJECT NO. 23.141001.00

SHEET 2 OF 2

Appendix E – HydroCAD Analysis

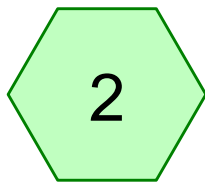




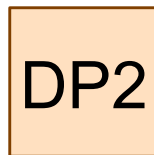
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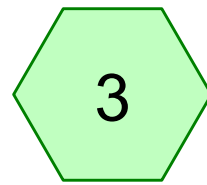
Design Point 1



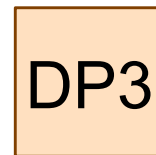
Solar Field



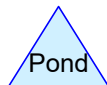
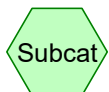
Design Point 2



Solar Field



Design Point 3



Routing Diagram for Pre Dev - Bovoni

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Pre Dev - Bovoni

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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
71,750	96	Artifical desert landscape, HSG D (1)
11,295	89	Dirt roads, HSG D (1, 3)
745	98	Impervious area, HSG D (1)
4,425	98	Paved parking, HSG D (3)
1,139,410	79	Woods/grass comb., Good, HSG D (1, 2, 3)
1,227,625	80	TOTAL AREA

Pre Dev - Bovoni

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
1,227,625	HSG D	1, 2, 3
0	Other	
1,227,625		TOTAL AREA

Pre Dev - Bovoni

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Type II 24-hr 2-Yr Rainfall=3.82"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Solar Field

Runoff Area=555,670 sf 0.13% Impervious Runoff Depth>1.81"
Flow Length=910' Tc=20.7 min CN=81 Runoff=27.24 cfs 83,694 cf

Subcatchment 2: Solar Field

Runoff Area=382,660 sf 0.00% Impervious Runoff Depth>1.66"
Flow Length=515' Tc=19.1 min CN=79 Runoff=18.07 cfs 52,997 cf

Subcatchment 3: Solar Field

Runoff Area=289,295 sf 1.53% Impervious Runoff Depth>1.66"
Flow Length=398' Tc=15.3 min CN=79 Runoff=15.31 cfs 40,124 cf

Reach DP1: Design Point 1

Inflow=27.24 cfs 83,694 cf
Outflow=27.24 cfs 83,694 cf

Reach DP2: Design Point 2

Inflow=18.07 cfs 52,997 cf
Outflow=18.07 cfs 52,997 cf

Reach DP3: Design Point 3

Inflow=15.31 cfs 40,124 cf
Outflow=15.31 cfs 40,124 cf

Total Runoff Area = 1,227,625 sf Runoff Volume = 176,815 cf Average Runoff Depth = 1.73"
99.58% Pervious = 1,222,455 sf 0.42% Impervious = 5,170 sf

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Solar Field

Runoff Area=555,670 sf 0.13% Impervious Runoff Depth>4.73"
Flow Length=910' Tc=20.7 min CN=81 Runoff=69.49 cfs 219,084 cf

Subcatchment 2: Solar Field

Runoff Area=382,660 sf 0.00% Impervious Runoff Depth>4.51"
Flow Length=515' Tc=19.1 min CN=79 Runoff=48.11 cfs 143,946 cf

Subcatchment 3: Solar Field

Runoff Area=289,295 sf 1.53% Impervious Runoff Depth>4.52"
Flow Length=398' Tc=15.3 min CN=79 Runoff=40.55 cfs 108,954 cf

Reach DP1: Design Point 1

Inflow=69.49 cfs 219,084 cf
Outflow=69.49 cfs 219,084 cf

Reach DP2: Design Point 2

Inflow=48.11 cfs 143,946 cf
Outflow=48.11 cfs 143,946 cf

Reach DP3: Design Point 3

Inflow=40.55 cfs 108,954 cf
Outflow=40.55 cfs 108,954 cf

Total Runoff Area = 1,227,625 sf Runoff Volume = 471,984 cf Average Runoff Depth = 4.61"
99.58% Pervious = 1,222,455 sf 0.42% Impervious = 5,170 sf

Summary for Subcatchment 1: Solar Field

Runoff = 69.49 cfs @ 12.13 hrs, Volume= 219,084 cf, Depth> 4.73"

Routed to Reach DP1 : Design Point 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Yr Rainfall=7.30"

Area (sf)	CN	Description
* 745	98	Impervious area, HSG D
71,750	96	Artificial desert landscape, HSG D
* 9,685	89	Dirt roads, HSG D
473,490	79	Woods/grass comb., Good, HSG D
555,670	81	Weighted Average
554,925		99.87% Pervious Area
745		0.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.9	300	0.3067	0.31		Sheet Flow, Woods
					Woods: Light underbrush n= 0.400 P2= 3.82"
4.8	610	0.1771	2.10		Shallow Concentrated Flow, Woods
					Woodland Kv= 5.0 fps
20.7	910	Total			

Summary for Subcatchment 2: Solar Field

Runoff = 48.11 cfs @ 12.11 hrs, Volume= 143,946 cf, Depth> 4.51"

Routed to Reach DP2 : Design Point 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Yr Rainfall=7.30"

Area (sf)	CN	Description
382,660	79	Woods/grass comb., Good, HSG D
382,660		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	300	0.2233	0.28		Sheet Flow, Woods
					Woods: Light underbrush n= 0.400 P2= 3.82"
1.1	215	0.4186	3.23		Shallow Concentrated Flow, Woods
					Woodland Kv= 5.0 fps
19.1	515	Total			

Summary for Subcatchment 3: Solar Field

Runoff = 40.55 cfs @ 12.07 hrs, Volume= 108,954 cf, Depth> 4.52"
 Routed to Reach DP3 : Design Point 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Yr Rainfall=7.30"

Area (sf)	CN	Description
4,425	98	Paved parking, HSG D
* 1,610	89	Dirt roads, HSG D
283,260	79	Woods/grass comb., Good, HSG D
289,295	79	Weighted Average
284,870		98.47% Pervious Area
4,425		1.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	300	0.3733	0.34		Sheet Flow, Woods
					Woods: Light underbrush n= 0.400 P2= 3.82"
0.6	98	0.2857	2.67		Shallow Concentrated Flow, Woods
					Woodland Kv= 5.0 fps
15.3	398	Total			

Summary for Reach DP1: Design Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 555,670 sf, 0.13% Impervious, Inflow Depth > 4.73" for 10-Yr event
 Inflow = 69.49 cfs @ 12.13 hrs, Volume= 219,084 cf
 Outflow = 69.49 cfs @ 12.13 hrs, Volume= 219,084 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach DP2: Design Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 382,660 sf, 0.00% Impervious, Inflow Depth > 4.51" for 10-Yr event
 Inflow = 48.11 cfs @ 12.11 hrs, Volume= 143,946 cf
 Outflow = 48.11 cfs @ 12.11 hrs, Volume= 143,946 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach DP3: Design Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 289,295 sf, 1.53% Impervious, Inflow Depth > 4.52" for 10-Yr event
Inflow = 40.55 cfs @ 12.07 hrs, Volume= 108,954 cf
Outflow = 40.55 cfs @ 12.07 hrs, Volume= 108,954 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pre Dev - Bovoni*Type II 24-hr 25-Yr Rainfall=9.58"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Solar Field

Runoff Area=555,670 sf 0.13% Impervious Runoff Depth>6.77"
Flow Length=910' Tc=20.7 min CN=81 Runoff=97.68 cfs 313,322 cf

Subcatchment 2: Solar Field

Runoff Area=382,660 sf 0.00% Impervious Runoff Depth>6.53"
Flow Length=515' Tc=19.1 min CN=79 Runoff=68.38 cfs 208,085 cf

Subcatchment 3: Solar Field

Runoff Area=289,295 sf 1.53% Impervious Runoff Depth>6.53"
Flow Length=398' Tc=15.3 min CN=79 Runoff=57.54 cfs 157,487 cf

Reach DP1: Design Point 1

Inflow=97.68 cfs 313,322 cf
Outflow=97.68 cfs 313,322 cf

Reach DP2: Design Point 2

Inflow=68.38 cfs 208,085 cf
Outflow=68.38 cfs 208,085 cf

Reach DP3: Design Point 3

Inflow=57.54 cfs 157,487 cf
Outflow=57.54 cfs 157,487 cf

Total Runoff Area = 1,227,625 sf Runoff Volume = 678,893 cf Average Runoff Depth = 6.64"
99.58% Pervious = 1,222,455 sf 0.42% Impervious = 5,170 sf

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Solar Field

Runoff Area=555,670 sf 0.13% Impervious Runoff Depth>10.32"
Flow Length=910' Tc=20.7 min CN=81 Runoff=145.86 cfs 477,982 cf

Subcatchment 2: Solar Field

Runoff Area=382,660 sf 0.00% Impervious Runoff Depth>10.06"
Flow Length=515' Tc=19.1 min CN=79 Runoff=103.14 cfs 320,940 cf

Subcatchment 3: Solar Field

Runoff Area=289,295 sf 1.53% Impervious Runoff Depth>10.07"
Flow Length=398' Tc=15.3 min CN=79 Runoff=86.66 cfs 242,841 cf

Reach DP1: Design Point 1

Inflow=145.86 cfs 477,982 cf
Outflow=145.86 cfs 477,982 cf

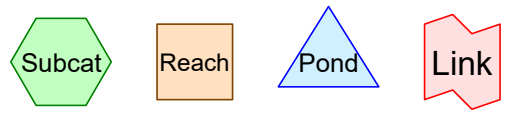
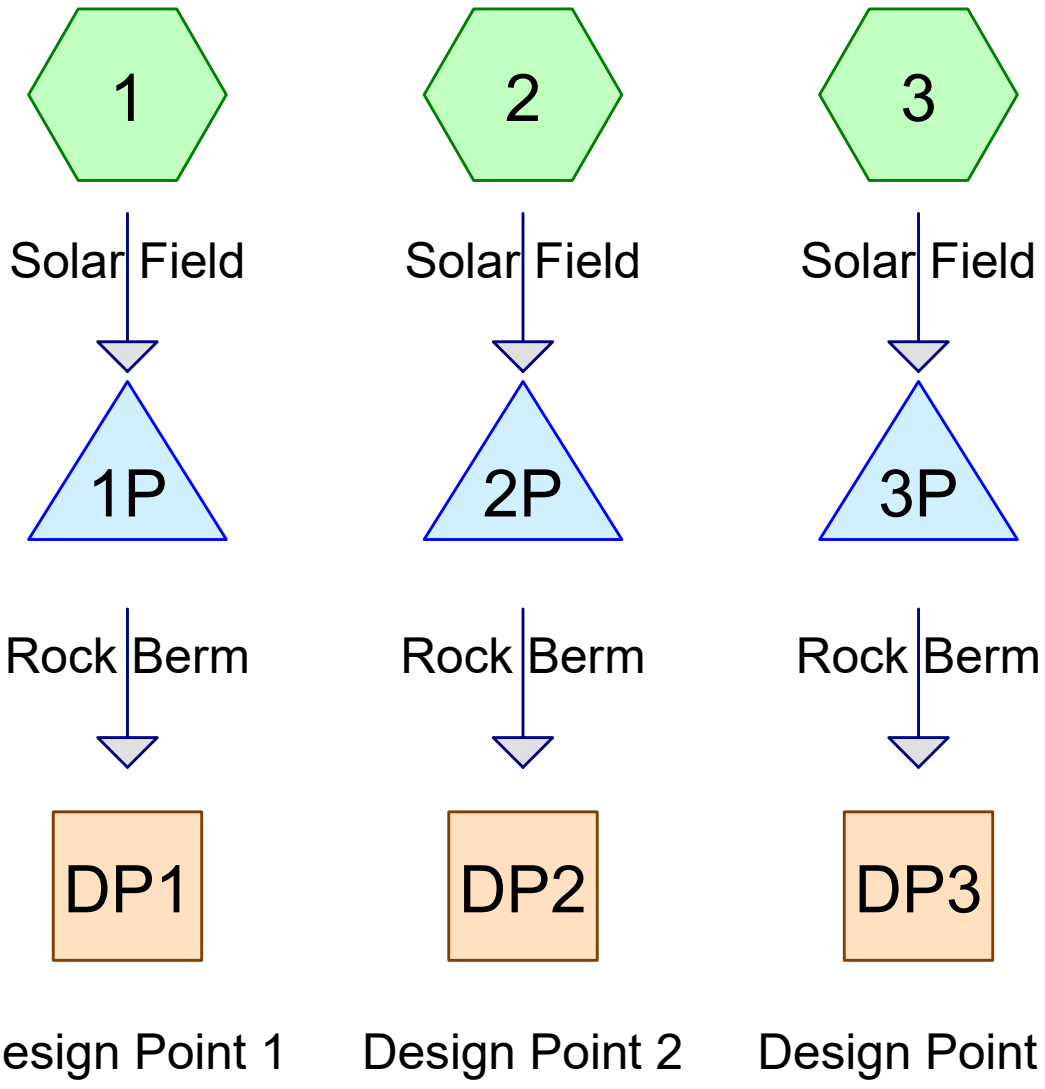
Reach DP2: Design Point 2

Inflow=103.14 cfs 320,940 cf
Outflow=103.14 cfs 320,940 cf

Reach DP3: Design Point 3

Inflow=86.66 cfs 242,841 cf
Outflow=86.66 cfs 242,841 cf

Total Runoff Area = 1,227,625 sf Runoff Volume = 1,041,763 cf Average Runoff Depth = 10.18"
99.58% Pervious = 1,222,455 sf 0.42% Impervious = 5,170 sf



Post Dev - Bovoni

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
970,475	80	>75% Grass cover, Good, HSG D (1, 2, 3)
71,750	96	Artifical desert landscape, HSG D (1)
41,125	96	Gravel surface, HSG D (1)
4,195	98	Impervious area, HSG D (1)
4,425	98	Paved parking, HSG D (3)
135,655	79	Woods/grass comb., Good, HSG D (1, 2, 3)
1,227,625	81	TOTAL AREA

Post Dev - Bovoni

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
1,227,625	HSG D	1, 2, 3
0	Other	
1,227,625		TOTAL AREA

Post Dev - Bovoni*Type II 24-hr 2-Yr Rainfall=3.82"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Solar Field

Runoff Area=555,670 sf 0.75% Impervious Runoff Depth>1.96"
Flow Length=910' Tc=23.9 min CN=83 Runoff=27.13 cfs 90,710 cf

Subcatchment 2: Solar Field

Runoff Area=382,660 sf 0.00% Impervious Runoff Depth>1.73"
Flow Length=515' Tc=20.9 min CN=80 Runoff=17.91 cfs 55,267 cf

Subcatchment 3: Solar Field

Runoff Area=289,295 sf 1.53% Impervious Runoff Depth>1.74"
Flow Length=398' Tc=16.7 min CN=80 Runoff=15.33 cfs 41,849 cf

Reach DP1: Design Point 1

Inflow=27.21 cfs 89,323 cf
Outflow=27.21 cfs 89,323 cf

Reach DP2: Design Point 2

Inflow=18.01 cfs 54,852 cf
Outflow=18.01 cfs 54,852 cf

Reach DP3: Design Point 3

Inflow=15.31 cfs 40,977 cf
Outflow=15.31 cfs 40,977 cf

Pond 1P: Rock Berm

Peak Elev=41.30' Storage=1,272 cf Inflow=27.13 cfs 90,710 cf
Discarded=0.00 cfs 137 cf Primary=27.21 cfs 89,323 cf Outflow=27.21 cfs 89,460 cf

Pond 2P: Rock Berm

Peak Elev=93.20' Storage=368 cf Inflow=17.91 cfs 55,267 cf
Discarded=0.00 cfs 38 cf Primary=18.01 cfs 54,852 cf Outflow=18.01 cfs 54,890 cf

Pond 3P: Rock Berm

Peak Elev=97.16' Storage=796 cf Inflow=15.33 cfs 41,849 cf
Discarded=0.00 cfs 75 cf Primary=15.31 cfs 40,977 cf Outflow=15.31 cfs 41,051 cf

Total Runoff Area = 1,227,625 sf Runoff Volume = 187,826 cf Average Runoff Depth = 1.84"
99.30% Pervious = 1,219,005 sf 0.70% Impervious = 8,620 sf

Post Dev - Bovoni*Type II 24-hr 10-Yr Rainfall=7.30"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Solar Field

Runoff Area=555,670 sf 0.75% Impervious Runoff Depth>4.95"
Flow Length=910' Tc=23.9 min CN=83 Runoff=66.59 cfs 229,122 cf

Subcatchment 2: Solar Field

Runoff Area=382,660 sf 0.00% Impervious Runoff Depth>4.62"
Flow Length=515' Tc=20.9 min CN=80 Runoff=46.69 cfs 147,354 cf

Subcatchment 3: Solar Field

Runoff Area=289,295 sf 1.53% Impervious Runoff Depth>4.63"
Flow Length=398' Tc=16.7 min CN=80 Runoff=39.73 cfs 111,547 cf

Reach DP1: Design Point 1

Inflow=66.40 cfs 227,696 cf
Outflow=66.40 cfs 227,696 cf

Reach DP2: Design Point 2

Inflow=46.77 cfs 146,928 cf
Outflow=46.77 cfs 146,928 cf

Reach DP3: Design Point 3

Inflow=39.61 cfs 110,641 cf
Outflow=39.61 cfs 110,641 cf

Pond 1P: Rock Berm

Peak Elev=41.61' Storage=1,272 cf Inflow=66.59 cfs 229,122 cf
Discarded=0.00 cfs 176 cf Primary=66.40 cfs 227,696 cf Outflow=66.40 cfs 227,872 cf

Pond 2P: Rock Berm

Peak Elev=93.47' Storage=368 cf Inflow=46.69 cfs 147,354 cf
Discarded=0.00 cfs 49 cf Primary=46.77 cfs 146,928 cf Outflow=46.77 cfs 146,977 cf

Pond 3P: Rock Berm

Peak Elev=97.42' Storage=796 cf Inflow=39.73 cfs 111,547 cf
Discarded=0.00 cfs 98 cf Primary=39.61 cfs 110,641 cf Outflow=39.62 cfs 110,739 cf

Total Runoff Area = 1,227,625 sf Runoff Volume = 488,023 cf Average Runoff Depth = 4.77"
99.30% Pervious = 1,219,005 sf 0.70% Impervious = 8,620 sf

Post Dev - Bovoni

Type II 24-hr 10-Yr Rainfall=7.30"

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Summary for Subcatchment 1: Solar Field

Runoff = 66.59 cfs @ 12.16 hrs, Volume= 229,122 cf, Depth> 4.95"
 Routed to Pond 1P : Rock Berm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Yr Rainfall=7.30"

Area (sf)	CN	Description
* 4,195	98	Impervious area, HSG D
71,750	96	Artificial desert landscape, HSG D
41,125	96	Gravel surface, HSG D
27,000	79	Woods/grass comb., Good, HSG D
411,600	80	>75% Grass cover, Good, HSG D
555,670	83	Weighted Average
551,475		99.25% Pervious Area
4,195		0.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.5	300	0.3067	0.29		Sheet Flow, Dense Grass 6"-12" n= 0.450 P2= 3.82"
2.4	405	0.2519	2.76		Shallow Concentrated Flow, Dense Grass 6"-12" Kv= 5.5 fps
4.0	205	0.0293	0.86		Shallow Concentrated Flow, Woods Woodland Kv= 5.0 fps
23.9	910	Total			

Summary for Subcatchment 2: Solar Field

Runoff = 46.69 cfs @ 12.13 hrs, Volume= 147,354 cf, Depth> 4.62"
 Routed to Pond 2P : Rock Berm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Yr Rainfall=7.30"

Area (sf)	CN	Description
41,715	79	Woods/grass comb., Good, HSG D
340,945	80	>75% Grass cover, Good, HSG D
382,660	80	Weighted Average
382,660		100.00% Pervious Area

Post Dev - Bovoni

Type II 24-hr 10-Yr Rainfall=7.30"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	300	0.2233	0.25		Sheet Flow, Dense Grass 6"-12" n= 0.450 P2= 3.82"
0.9	185	0.4000	3.48		Shallow Concentrated Flow, Dense Grass 6"-12" Kv= 5.5 fps
0.2	30	0.4000	3.16		Shallow Concentrated Flow, Woods Woodland Kv= 5.0 fps
20.9	515	Total			

Summary for Subcatchment 3: Solar Field

Runoff = 39.73 cfs @ 12.09 hrs, Volume= 111,547 cf, Depth> 4.63"
 Routed to Pond 3P : Rock Berm

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type II 24-hr 10-Yr Rainfall=7.30"

Area (sf)	CN	Description
4,425	98	Paved parking, HSG D
217,930	80	>75% Grass cover, Good, HSG D
66,940	79	Woods/grass comb., Good, HSG D
289,295	80	Weighted Average
284,870		98.47% Pervious Area
4,425		1.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.1	300	0.3733	0.31		Sheet Flow, Dense Grass 6"-12" n= 0.450 P2= 3.82"
0.4	68	0.2353	2.67		Shallow Concentrated Flow, Dense Grass 6"-12" Kv= 5.5 fps
0.2	30	0.4000	3.16		Shallow Concentrated Flow, Woods Woodland Kv= 5.0 fps
16.7	398	Total			

Summary for Reach DP1: Design Point 1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 555,670 sf, 0.75% Impervious, Inflow Depth > 4.92" for 10-Yr event
 Inflow = 66.40 cfs @ 12.17 hrs, Volume= 227,696 cf
 Outflow = 66.40 cfs @ 12.17 hrs, Volume= 227,696 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach DP2: Design Point 2

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 382,660 sf, 0.00% Impervious, Inflow Depth > 4.61" for 10-Yr event
 Inflow = 46.77 cfs @ 12.13 hrs, Volume= 146,928 cf
 Outflow = 46.77 cfs @ 12.13 hrs, Volume= 146,928 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach DP3: Design Point 3

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 289,295 sf, 1.53% Impervious, Inflow Depth > 4.59" for 10-Yr event
 Inflow = 39.61 cfs @ 12.09 hrs, Volume= 110,641 cf
 Outflow = 39.61 cfs @ 12.09 hrs, Volume= 110,641 cf, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Rock Berm

[92] Warning: Device #2 is above defined storage

[92] Warning: Device #3 is above defined storage

[93] Warning: Storage range exceeded by 1.61'

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=103)

Inflow Area = 555,670 sf, 0.75% Impervious, Inflow Depth > 4.95" for 10-Yr event
 Inflow = 66.59 cfs @ 12.16 hrs, Volume= 229,122 cf
 Outflow = 66.40 cfs @ 12.17 hrs, Volume= 227,872 cf, Atten= 0%, Lag= 0.2 min
 Discarded = 0.00 cfs @ 6.95 hrs, Volume= 176 cf
 Primary = 66.40 cfs @ 12.17 hrs, Volume= 227,696 cf

Routed to Reach DP1 : Design Point 1

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 41.61' @ 12.17 hrs Surf.Area= 1,500 sf Storage= 1,272 cf

Plug-Flow detention time= 4.4 min calculated for 227,113 cf (99% of inflow)

Center-of-Mass det. time= 2.3 min (776.8 - 774.5)

Volume	Invert	Avail.Storage	Storage Description
#1	36.00'	1,272 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 3,180 cf Overall x 40.0% Voids
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
36.00	260	0	0
38.00	710	970	970
40.00	1,500	2,210	3,180

Post Dev - Bovoni

Type II 24-hr 10-Yr Rainfall=7.30"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	36.00'	0.100 in/hr Exfiltration over Surface area
#2	Primary	40.00'	40.00' long x 5.00' breadth x 4.00' high Rock Fill Rock Diam.= 6.000", S.D.= 2.000", Voids= 40.0%
#3	Primary	41.00'	40.0' long + 0.3 '/' SideZ x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.00 cfs @ 6.95 hrs HW=40.07' (Free Discharge)←**1=Exfiltration** (Exfiltration Controls 0.00 cfs)**Primary OutFlow** Max=65.83 cfs @ 12.17 hrs HW=41.61' (Free Discharge)←**2=Rock Fill** (Rockfill Controls 14.83 cfs @ 0.46 fps)←**3=Broad-Crested Rectangular Weir** (Weir Controls 51.00 cfs @ 2.10 fps)**Summary for Pond 2P: Rock Berm**

[92] Warning: Device #2 is above defined storage

[92] Warning: Device #3 is above defined storage

[93] Warning: Storage range exceeded by 1.47'

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 382,660 sf, 0.00% Impervious, Inflow Depth > 4.62" for 10-Yr event
 Inflow = 46.69 cfs @ 12.13 hrs, Volume= 147,354 cf
 Outflow = 46.77 cfs @ 12.13 hrs, Volume= 146,977 cf, Atten= 0%, Lag= 0.1 min
 Discarded = 0.00 cfs @ 7.00 hrs, Volume= 49 cf
 Primary = 46.77 cfs @ 12.13 hrs, Volume= 146,928 cf
 Routed to Reach DP2 : Design Point 2

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 93.47' @ 12.13 hrs Surf.Area= 430 sf Storage= 368 cf

Plug-Flow detention time= 1.9 min calculated for 146,489 cf (99% of inflow)

Center-of-Mass det. time= 0.9 min (779.3 - 778.4)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	368 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 920 cf Overall x 40.0% Voids
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
88.00	60	0	0
90.00	215	275	275
92.00	430	645	920

Device	Routing	Invert	Outlet Devices
#1	Discarded	88.00'	0.100 in/hr Exfiltration over Surface area
#2	Primary	92.00'	40.00' long x 5.00' breadth x 4.00' high Rock Fill Rock Diam.= 6.000", S.D.= 2.000", Voids= 40.0%

Post Dev - Bovoni

Type II 24-hr 10-Yr Rainfall=7.30"

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#3 Primary 93.00' **40.0' long + 0.3 ' SideZ x 5.0' breadth Broad-Crested Rectangular Weir**
 Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00
 2.50 3.00 3.50 4.00 4.50 5.00 5.50
 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65
 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.00 cfs @ 7.00 hrs HW=92.03' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=46.09 cfs @ 12.13 hrs HW=93.47' (Free Discharge)

↑ **2=Rock Fill** (Rockfill Controls 12.98 cfs @ 0.44 fps)

↑ **3=Broad-Crested Rectangular Weir** (Weir Controls 33.11 cfs @ 1.76 fps)

Summary for Pond 3P: Rock Berm

[92] Warning: Device #2 is above defined storage

[92] Warning: Device #3 is above defined storage

[93] Warning: Storage range exceeded by 1.42'

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=96)

Inflow Area = 289,295 sf, 1.53% Impervious, Inflow Depth > 4.63" for 10-Yr event
 Inflow = 39.73 cfs @ 12.09 hrs, Volume= 111,547 cf
 Outflow = 39.62 cfs @ 12.09 hrs, Volume= 110,739 cf, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 7.85 hrs, Volume= 98 cf
 Primary = 39.61 cfs @ 12.09 hrs, Volume= 110,641 cf
 Routed to Reach DP3 : Design Point 3

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 97.42' @ 12.09 hrs Surf.Area= 880 sf Storage= 796 cf

Plug-Flow detention time= 5.3 min calculated for 110,371 cf (99% of inflow)

Center-of-Mass det. time= 2.5 min (777.5 - 775.0)

Volume	Invert	Avail.Storage	Storage Description
#1	92.00'	796 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 1,990 cf Overall x 40.0% Voids

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	150	0	0
94.00	480	630	630
96.00	880	1,360	1,990

Device	Routing	Invert	Outlet Devices
#1	Discarded	92.00'	0.100 in/hr Exfiltration over Surface area
#2	Primary	96.00'	40.00' long x 5.00' breadth x 4.00' high Rock Fill Rock Diam.= 6.000", S.D.= 2.000", Voids= 40.0%
#3	Primary	97.00'	40.0' long + 0.3 ' SideZ x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65

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Type II 24-hr 10-Yr Rainfall=7.30"

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2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.00 cfs @ 7.85 hrs HW=96.13' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.00 cfs)

Primary OutFlow Max=38.93 cfs @ 12.09 hrs HW=97.41' (Free Discharge)

↑**2=Rock Fill** (Rockfill Controls 12.24 cfs @ 0.43 fps)

↑**3=Broad-Crested Rectangular Weir** (Weir Controls 26.69 cfs @ 1.61 fps)

Post Dev - Bovoni*Type II 24-hr 25-Yr Rainfall=9.58"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Solar Field

Runoff Area=555,670 sf 0.75% Impervious Runoff Depth>7.00"
Flow Length=910' Tc=23.9 min CN=83 Runoff=92.66 cfs 324,167 cf

Subcatchment 2: Solar Field

Runoff Area=382,660 sf 0.00% Impervious Runoff Depth>6.64"
Flow Length=515' Tc=20.9 min CN=80 Runoff=66.01 cfs 211,881 cf

Subcatchment 3: Solar Field

Runoff Area=289,295 sf 1.53% Impervious Runoff Depth>6.65"
Flow Length=398' Tc=16.7 min CN=80 Runoff=56.07 cfs 160,372 cf

Reach DP1: Design Point 1

Inflow=92.61 cfs 322,716 cf
Outflow=92.61 cfs 322,716 cf

Reach DP2: Design Point 2

Inflow=65.98 cfs 211,464 cf
Outflow=65.98 cfs 211,464 cf

Reach DP3: Design Point 3

Inflow=56.03 cfs 159,467 cf
Outflow=56.03 cfs 159,467 cf

Pond 1P: Rock Berm

Peak Elev=41.79' Storage=1,272 cf Inflow=92.66 cfs 324,167 cf
Discarded=0.00 cfs 183 cf Primary=92.61 cfs 322,716 cf Outflow=92.61 cfs 322,899 cf

Pond 2P: Rock Berm

Peak Elev=93.61' Storage=368 cf Inflow=66.01 cfs 211,881 cf
Discarded=0.00 cfs 53 cf Primary=65.98 cfs 211,464 cf Outflow=65.98 cfs 211,517 cf

Pond 3P: Rock Berm

Peak Elev=97.54' Storage=796 cf Inflow=56.07 cfs 160,372 cf
Discarded=0.00 cfs 105 cf Primary=56.03 cfs 159,467 cf Outflow=56.03 cfs 159,573 cf

Total Runoff Area = 1,227,625 sf Runoff Volume = 696,420 cf Average Runoff Depth = 6.81"
99.30% Pervious = 1,219,005 sf 0.70% Impervious = 8,620 sf

Post Dev - Bovoni*Type II 24-hr 100-Yr Rainfall=13.50"*

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Solar Field

Runoff Area=555,670 sf 0.75% Impervious Runoff Depth>10.57"
Flow Length=910' Tc=23.9 min CN=83 Runoff=137.10 cfs 489,372 cf

Subcatchment 2: Solar Field

Runoff Area=382,660 sf 0.00% Impervious Runoff Depth>10.19"
Flow Length=515' Tc=20.9 min CN=80 Runoff=99.08 cfs 325,011 cf

Subcatchment 3: Solar Field

Runoff Area=289,295 sf 1.53% Impervious Runoff Depth>10.20"
Flow Length=398' Tc=16.7 min CN=80 Runoff=84.02 cfs 245,936 cf

Reach DP1: Design Point 1

Inflow=137.71 cfs 487,854 cf
Outflow=137.71 cfs 487,854 cf

Reach DP2: Design Point 2

Inflow=98.91 cfs 324,616 cf
Outflow=98.91 cfs 324,616 cf

Reach DP3: Design Point 3

Inflow=83.98 cfs 245,027 cf
Outflow=83.98 cfs 245,027 cf

Pond 1P: Rock Berm

Peak Elev=42.05' Storage=1,272 cf Inflow=137.10 cfs 489,372 cf
Discarded=0.00 cfs 186 cf Primary=137.71 cfs 487,854 cf Outflow=137.71 cfs 488,040 cf

Pond 2P: Rock Berm

Peak Elev=93.83' Storage=368 cf Inflow=99.08 cfs 325,011 cf
Discarded=0.00 cfs 54 cf Primary=98.91 cfs 324,616 cf Outflow=98.92 cfs 324,669 cf

Pond 3P: Rock Berm

Peak Elev=97.73' Storage=796 cf Inflow=84.02 cfs 245,936 cf
Discarded=0.00 cfs 109 cf Primary=83.98 cfs 245,027 cf Outflow=83.99 cfs 245,136 cf

Total Runoff Area = 1,227,625 sf Runoff Volume = 1,060,320 cf Average Runoff Depth = 10.36"
99.30% Pervious = 1,219,005 sf 0.70% Impervious = 8,620 sf