CULPEPPER & TERPENING INC

CULPEPPER & TERPENING, INC.

CONSULTING ENGINEERS, LAND SURVEYORS

BIG BEND III BATTERY ENERGY STORAGE SYSTEM

HILLSBOROUGH COUNTY, FLORIDA

DRAINAGE CALCULATIONS

DECEMBER 2025
C&T Project No. 20-215.005
Certificate of Authorization No. 4286

PREPARED BY
Culpepper & Terpening, Inc.
2980 South 25th Street
Fort Pierce, Florida 34982
Tel. (772) 464-3537
www.ct-eng.com

PREPARED FOR
Tampa Electric Company
702 N. Franklin Street
Plaza 8
Tampa, Florida 33602

TABLE OF CONTENTS

FIGURES

APPENDICES

SECTION 1 – GENERAL INFORMATION

1.1. Facility Information

Tampa Electric Company is proposing a Solar Power Generation Facility (the "Facility") known as the Big Bend III Battery Energy Storage System ("BESS"). The Facility is located within Section 10, Township 31S, Range 19E in Hillsborough County, Florida.

The Facility is generally located south of Big Bend Road, east of Dickman Road, and west of North U.S. Highway 41 (State Road 45). A general location map is provided in Figure 1 "Location Map" on page 2.

The Facility is located within an approximately 11.98-acre project area. The proposed improvements include the BESS installation, semi-pervious gravel access pathways, and a 1.4-acre stormwater treatment area.

A review of FEMA Flood Insurance Rate Map (FIRM) Panel No. 12057C0492H, dated October 7, 2021, indicates that the site is primarily located within FEMA Flood Zone X. A minimal portion of the site lies within Flood Zone AE, as shown in Figure 2 "FEMA Flood Map" on page 4; however, no proposed development is located within the mapped floodplain. As the site is situated within a tidally influenced drainage system and the project does not alter existing floodplain storage or conveyance, no adverse impacts to the floodplain are anticipated.

The study area consists of one (1) onsite drainage basin, which ultimately discharges northwest toward Tampa Bay. The development plan maintains historical drainage patterns, and no redirection or alteration of offsite drainage is proposed.

The site is situated on a fill mound approximately seven feet higher than the driveway tie-in. The top of the mound, where the BESS pad is proposed, slopes gradually to the northeast. This existing topography supports the proposed drainage design, which utilizes conveyance swales to capture onsite runoff and direct it eastward to the stormwater treatment area. Treated stormwater will outfall east into the perimeter ditch surrounding the property, ensuring post-development discharge rates remain below pre-development discharge rates in accordance with regulatory criteria.

The 100-year base flood elevation (BFE) is 11.0 feet. The proposed BESS pad elevation of 15.0 feet, as confirmed through design coordination, places the facility safely above both the regulatory flood elevation and the top of the existing flood wall.

The Pre-Development Basin Map is provided on page 5, and the Post-Development Basin Map is provided on page 6.

Figure 1 – Location Map

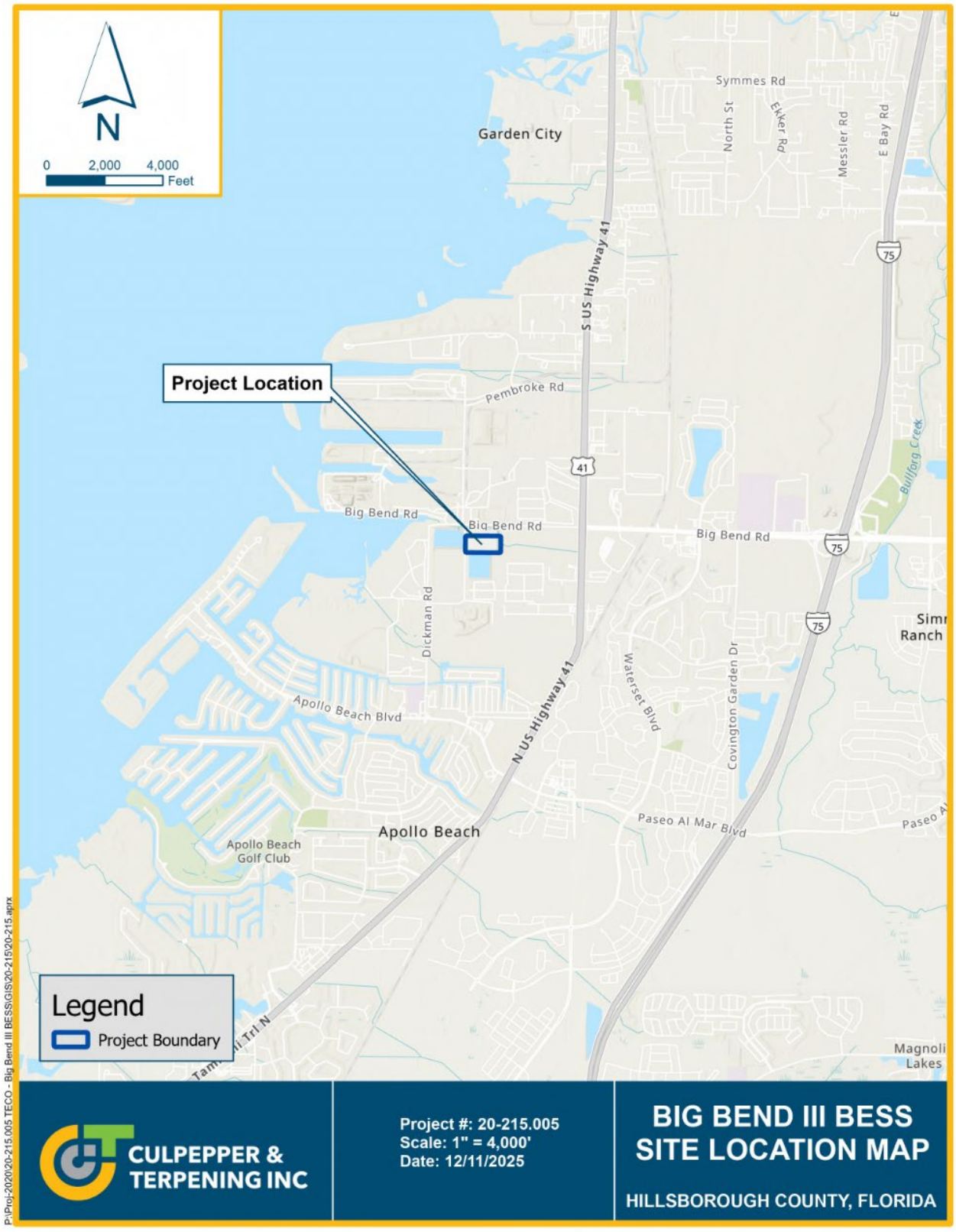


Figure 2 – FEMA Flood Map

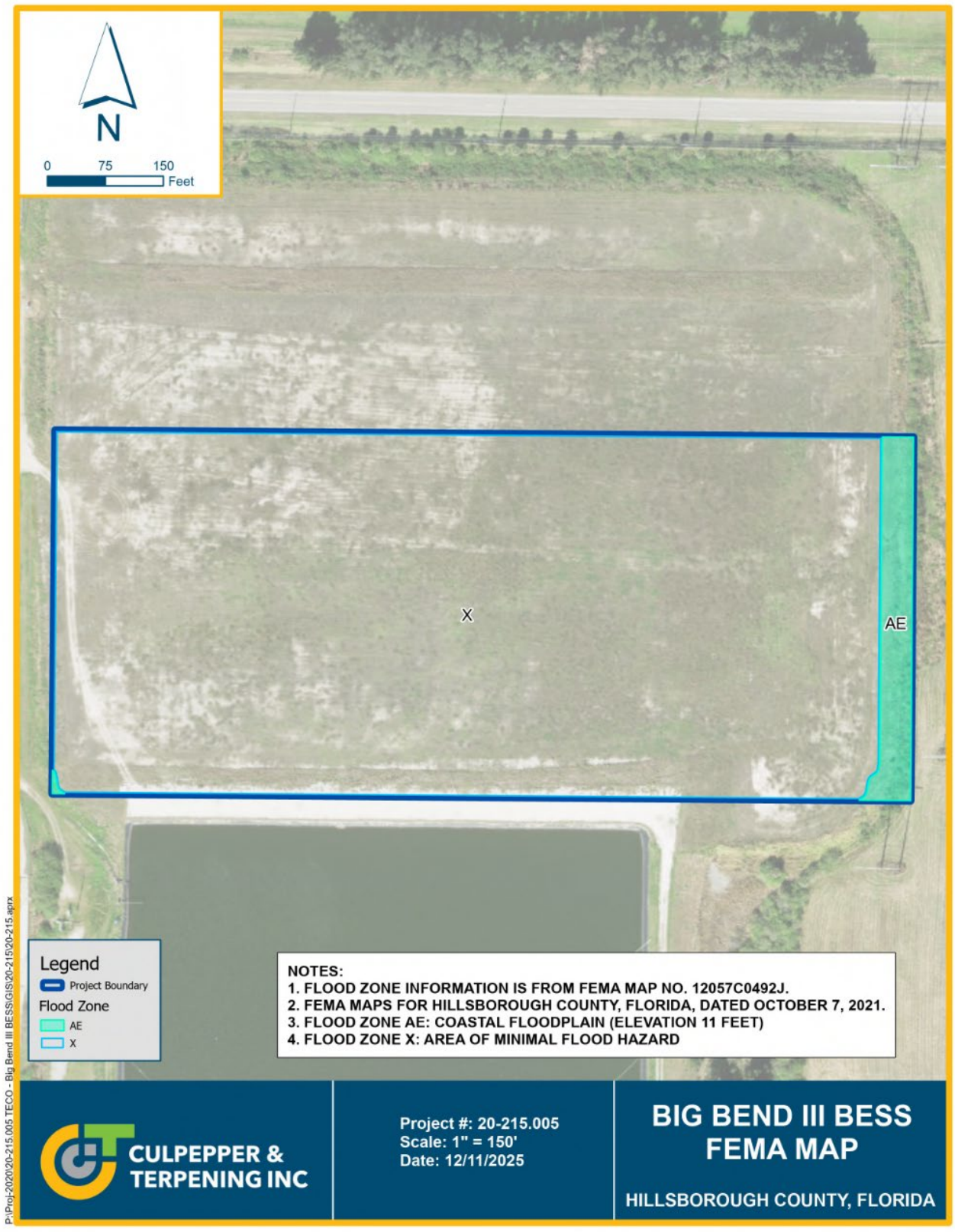


Figure 3 – Pre-Development Basin Map

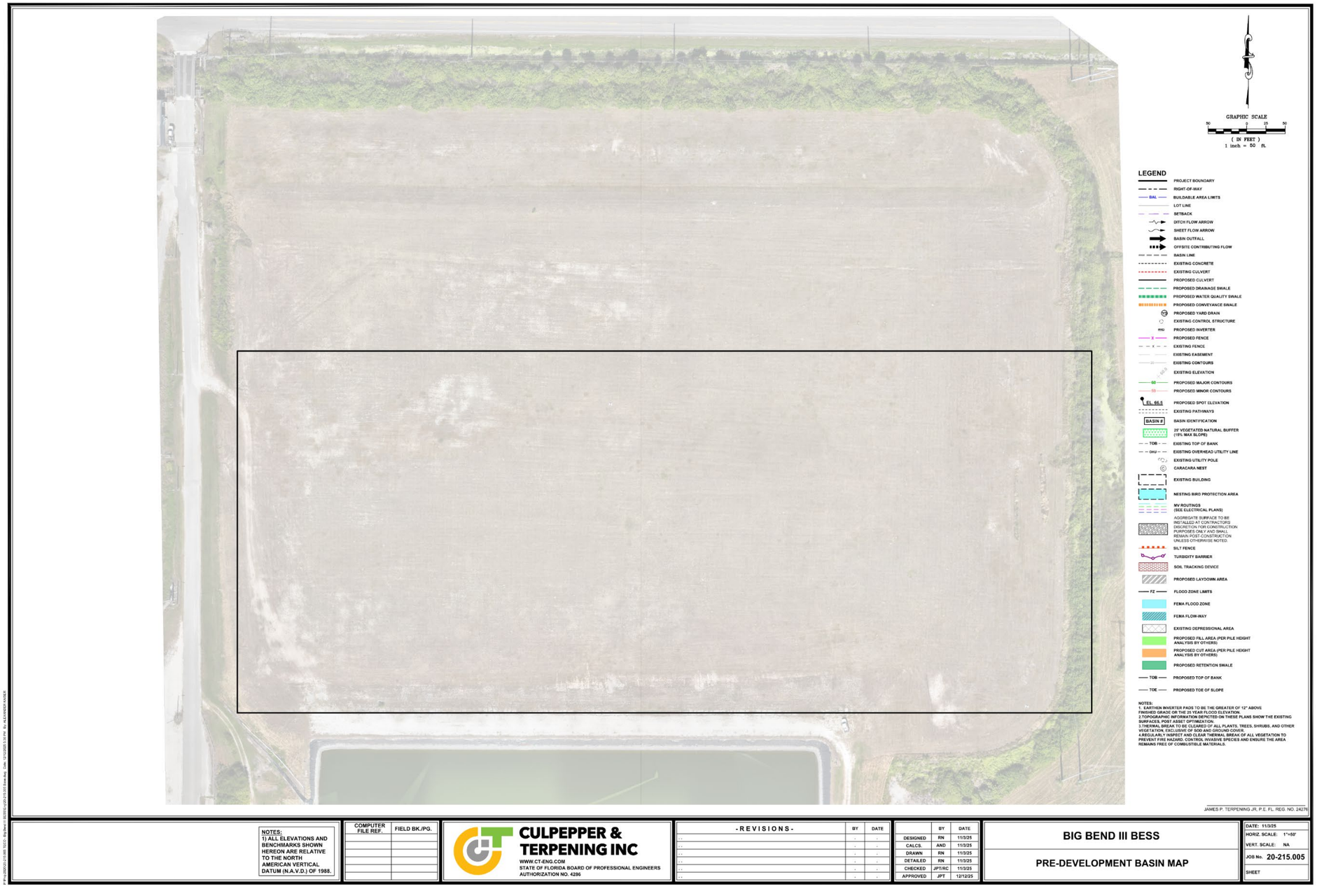
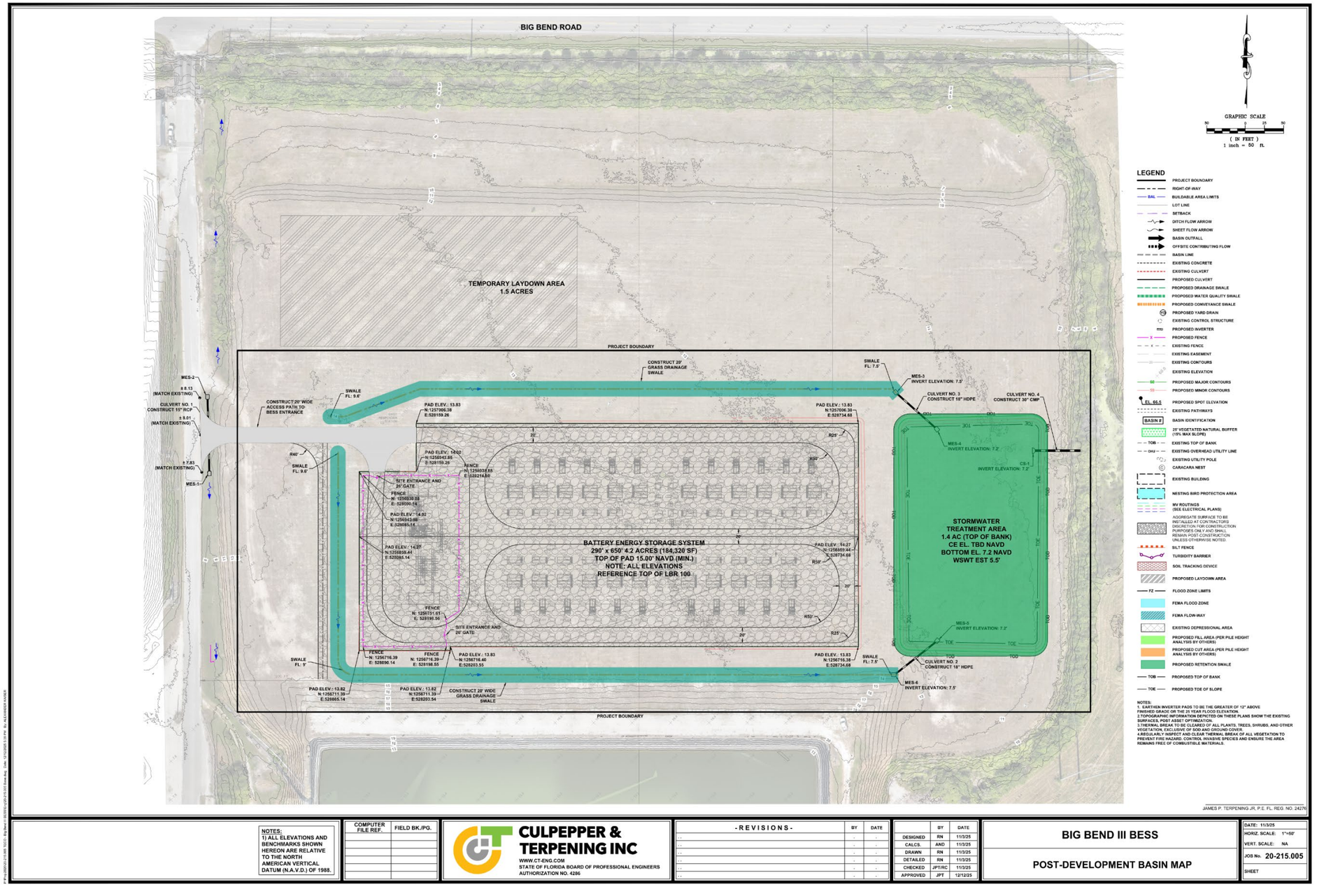


Figure 4 – Post-Development Basin Map



SECTION 2 – DESIGN APPROACH

The Facility will be designed such that no adverse water quantity or water quality impacts to receiving waters will occur as a result of the development, in accordance with the Southwest Florida Water Management District ("SWFWMD") Environmental Resource Permit (ERP) criteria and Section 62-330.304, Florida Administrative Code. The Facility will be designed following a "Civil Light" approach.

2.1. Civil Light Design Elements

The Civil Light Design Elements include:

- Minimizing grading by utilizing existing historical drainage patterns;
- Minimizing grading by promoting sheet-flow conveyance at or near existing grade;
- Grassing the site to reduce semi-impervious areas;
- Minimizing the introduction of new impervious area by using semi-impervious materials (e.g., rocked pathways);
- Preserving pre-development water quantity conditions;
- Preserving historical offsite drainage patterns.

2.2. Design Requirements and Methodology

The design requirements and methodology include the following:

2.2.1 Water Quantity

- The Site will be analyzed for water quantity based on a pre- versus post-development comparison consistent with SWFWMD ERP criteria.

2.2.2 Water Quality

- The Site will be analyzed as a single drainage basin for water quality treatment purposes.
- The project will be evaluated for water quality impacts associated with added impervious areas.
- In accordance with SWFWMD Applicant's Handbook Volume II, Section 4.0, and consistent with previous solar projects in the region, the required stormwater treatment volume is based on the runoff generated from the first 1.00 inch over the added impervious area.
- All semi-impervious areas were conservatively treated as fully impervious for the purpose of calculating the 1.00-inch treatment volume.
- In addition to the 1.00-inch treatment requirement, a nutrient loading analysis was performed in accordance with the current methodology in Section 9.2.2.
- Pre-Development and Post-Development Total Nitrogen (TN) and Total Phosphorus (TP) loads were calculated using the Section 9.2.2 runoff volume procedure and the applicable Event Mean Concentrations (EMCs) for the identified land uses.
- These results are compared to determine compliance with impaired-waters requirements (if applicable) and to confirm that the post-development

condition does not increase nutrient loads. All computations and assumptions are provided in the Nutrient Loading Appendix.

2.2.3 Floodplain

- FEMA Flood Insurance Rate Maps will be reviewed for applicable flood zone information.
- As the Site lies within Flood Zone X and a tidal system, no adverse impacts to the existing floodplain storage or conveyance are anticipated.

SECTION 3 – STORMWATER ANALYSIS

3.1. Pre-Development

3.1.1. Water Quantity

- The site ultimately discharges into Tampa Bay, and the tailwater conditions are governed by oceanic tidal influences.

3.1.2. Water Quality

- The Pre-Development site nutrient loading was calculated in accordance with Section 9.2.2 (current nutrient-loading methodology).
- The Pre-Development land use for the basin was represented as Low Intensity Commercial, and the event mean concentrations (EMCs) used to compute annual loads are TN = 0.93 mg/L and TP = 0.19 mg/L, per the Southwest Florida Water Management District Applicant's Handbook EMC table.
- Annual TN and TP Pre-Development mass loadings were calculated by multiplying the annual runoff volume for each basin (per Section 9.2.1) by the EMCs for Low Intensity Commercial and converting the results to pounds per year.

3.1.3. Floodplain Analysis

- The site is located within FEMA Flood Insurance Rate Map (FIRM) Panel No. 12057C0492H, dated October 7, 2021.
- The majority of the site, including all proposed development areas, lies within FEMA Flood Zone X. A small portion of the site, outside the development limits, is within Flood Zone AE, which includes a limited area mapped as Coastal Floodplain (BFE = 11 feet).
- The applicable FEMA Flood Map is provided in Figure 2 on page 3.

3.2. Post-Development

3.2.1. Water Quantity

- The existing drainage patterns are preserved in the Post-Development condition.
- No mass grading is proposed; therefore, the existing hydraulic connectivity and outfall locations are maintained.
- The site ultimately discharges to Tampa Bay, which is tidally influenced by the Gulf of Mexico.
- Tailwater conditions for all conveyances and discharge points are based on oceanic tidal conditions.

3.2.2. Water Quality

- The site was analyzed for Water Quality Volume based on the first 1.0 inch of runoff generated from the added impervious areas, consistent with SWFWMD Volume II, Section 4.0.
- In addition to the 1-inch treatment analysis, nutrient loading was calculated using the Section 9.2.2 methodology for Post-Development conditions.
- The Post-Development land use for the site was represented as Scrubby Flatwoods, with Event Mean Concentrations (EMCs) of TN = 1.155 mg/L and TP = 0.027 mg/L (per SWFWMD Applicant's Handbook EMC table).
- Annual TN and TP post-development mass loadings were calculated by multiplying the annual runoff volume for each basin (per Section 9.2.1) by the EMCs for Scrubby Flatwoods and converting to pounds per year.

3.2.3. Floodplain Analysis

All proposed developed areas lie entirely within Flood Zone X, and as the Site drains to a tidal system, no adverse impacts to floodplain storage or conveyance are expected

The Remainder of Page is Intentionally Blank

SECTION 4 – RESULTS

4.1. Water Quantity

There is no proposed mass grading of the site, the hydraulic connectivity and outfalls are all preserved in the Post-Development Condition. Restoration of the site to a natural grassland sheet flow condition, which had previously been agricultural pasture in the Pre-Development state results in increased time of concentration, decrease in the runoff Curve Number, and increased soil storage.

The site ultimately discharges into Tampa Bay and tailwater conditions are based on oceanic tidal conditions. Thus, a pre-development versus post-development analysis is not necessary as the post-development conditions will not have a negative impact on the downstream waterbody.

4.2. Water Quality

The Facility has been designed to utilize a Stormwater Treatment Area as the primary water quality treatment for the volume of runoff generated from 1 inch over the added impervious areas.

4.2.1. Stormwater Treatment Area

A summary of the Water Quality Analysis is shown in Table No. 1 “Water Quality Analysis Summary,” below and the full Water Quality Analysis can be found in Appendix 2.

Table No. 1

Water Quality Analysis Summary

Basin	Required Water Quality Volume (ac-ft.)	Provided Water Quality Volume (ac-ft.)
1	0.37	0.39
Total	**0.37**	**0.39**

4.2.2. Nutrient Analysis

A nutrient loading analysis was completed in accordance with the current SWFWMD and FDEP nutrient-loading methodology outlined in Section 9.2.2 of the Environmental Resource Permit Applicant’s Handbook Volume II. The analysis evaluated the Post-Development nutrient loads, treatment performance, and expected nitrogen (TN) and phosphorus (TP) reductions achieved through the proposed Stormwater Treatment Area and associated Best Management Practices (BMPs). The site was modeled as a single drainage catchment (Catchment 1 – BBIII BESS), and the proposed BMP configuration was evaluated using the BMP analysis tool with percent-removal efficiencies applied to the nearest whole percent.

The results indicate that the implemented BMPs provide substantial nutrient load reductions for the Post-Development condition. The total Post-Development nitrogen load generated onsite is 44.47 kg/yr, of which 42.51 kg/yr (93.73 lb/yr) is removed, resulting in a 96% total nitrogen load reduction. The resulting nitrogen discharge load to the receiving waterbody is 1.96 kg/yr (4.32 lb/yr).

Similarly, the total Post-Development phosphorus load is 7.398 kg/yr, with 7.072 kg/yr (15.594 lb/yr) removed, corresponding to a 96% total phosphorus load reduction. The resulting phosphorus discharge load is 0.326 kg/yr (0.72 lb/yr).

These results demonstrate that the proposed Stormwater Treatment Area and associated BMPs achieve significant nutrient removal efficiencies and ensure that Post-Development nitrogen and phosphorus loads discharged to Tampa Bay are minimized in accordance with current regulatory expectations for impaired waters and Total Maximum Daily Load (TMDL)–relevant basins.

A summary of the Nutrient Analysis is shown in Table No. 2 “Nutrient Analysis Summary,” below and the full Nutrient Analysis can be found in Appendix 2.

Table No. 2

Pre vs Post Water Quality Improvements

Basin	CN		Soil Storage (in.)		Nitrogen (kg/yr)		Phosphorus (kg/yr)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Basin	68	61	4.65	6.45	44.47	1.96	7.398	0.326
Δ	-6 CN Reduction		+1.8 Increase		96% Reduction		96% Reduction	

The Remainder of Page is Intentionally Blank

SECTION 5 – CONCLUSIONS

- All requirements of FDEP, SWFWMD and Hillsborough County addressing stormwater attenuation, water quantity and quality have been addressed and satisfied with this report;
- All State, Local and Federal flood protection requirements have been satisfied.
- The project area is approximately 11.98-acres.
- The Site's Post-Development total impervious area is: 4.43 acres
- The site is hydrologically analyzed as (1) drainage basin;
- The project maintains all existing drainage patterns, hydraulic connectivity, and outfall locations, with no mass grading proposed.
- The Pre-Development land use is best represented as Low Intensity Commercial/Open Space (poor condition), while the Post-Development open space areas more closely resemble natural grassland conditions, resulting in improved hydrologic characteristics (lower CN, increased storage, increased Tc).
- The onsite basin will continue to discharge toward Tampa Bay, and tailwater elevations remain controlled by oceanic tidal conditions.
- All proposed development occurs within FEMA Flood Zone X, and the project does not encroach upon or alter mapped floodplain storage or conveyance areas.
- The BESS pad elevation of 15.0 feet is located well above the 100-year Base Flood Elevation of 11.0 feet, providing adequate flood protection.
- Water quality treatment is provided through a Stormwater Treatment Area designed to treat the runoff volume generated from the first 1.0 inch of rainfall over the added impervious areas, consistent with SWFWMD Applicant's Handbook Volume II requirements and precedent for similar facilities.
- Semi-impervious areas were conservatively treated as fully impervious in the water quality volume calculations.
- Nutrient loading was evaluated using the current Section 9.2.2 methodology, with the site modeled as a single drainage catchment and BMP performance based on percent-removal efficiencies.

- The proposed BMPs achieve a 96% reduction in both Total Nitrogen and Total Phosphorus, reducing the nitrogen discharge load by 42.51 kg/yr (93.73 lb/yr) and reducing the phosphorus discharge load by 7.072 kg/yr (15.594 lb/yr).

- The significant reduction in nutrient loads ensures that Post-Development discharges to Tampa Bay are minimized and consistent with regulatory expectations for impaired waters and TMDL-sensitive basins.

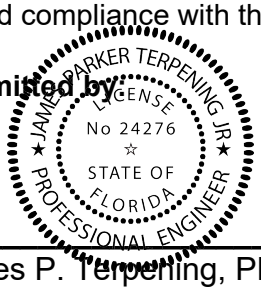
- Overall, the Post-Development hydrologic and water quality conditions are equal to or better than existing conditions, and the project meets SWFWMD Environmental Resource Permit (ERP) criteria for attenuation, flood protection, water quality treatment, and nutrient load reduction.

- Best Management Practices have been utilized in preparing an Erosion Sediment Control Plan to comply with the NPDES. Further, since the site does not require extensive earthwork, much of the existing pastureland will be maintained during the construction of the site.

The Remainder of Page is Intentionally Blank

I, James P. Terpening, PE, do certify that the application for Big Bend III Battery Energy Storage System has been designed in full compliance with the requirements of the Southwest Florida Water Management District, Hillsborough County and the Florida Department of Environmental Protection. All plans, calculations, reports, or other documents that have been submitted in support of the application bearing my signature and seal have been prepared in full recognition of and compliance with these requirements.

Submitted by:



This item has been digitally signed and sealed by James P. Terpening, PE, on 12/23/2025 2:30:38 PM.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies

James P. Terpening, PE Date
Florida Registration #24276
EOR Responsibility – 100% Pages 1-30

Appendix 1 – Pre/Post Development Analysis

TECO BIG BEND III BESS
Pre-Development

Land Use Summary	
Description	**Acres**
Impervious	
BESS	0.00 ac
Access Paths	0.10 ac
Total Impervious	**0.10 ac**
Pervious	
Stormwater Treatment Area	0.00 ac
Swales	0.00 ac
Open Space	11.87 ac
Total Pervious	**11.87 ac**
Total Area	**11.98 ac**
Basin Area	**11.98 ac**
Percent Impervious	**0.9%**
Percent Pervious	**99.1%**

TECO BIG BEND III BESS
PRE-DEVELOPMENT BASIN TIME OF CONCENTRATION (Tc)

BASIN	SHEET FLOW					SHALLOW CONCENTRATED FLOW					CHANNEL FLOW									Tc	
ID #	Manning n (--)	Flow Length L (ft)	2-Year 24-Hour Rain, P2 (in)	Land Slope s (--)	Tt_1 (hr)	Paved or Unpaved (P or U)	Flow Length L (ft)	Water-course Slope, s (--)	Avg Velocity V (ft/s)	Tt_2 (hr)	Culvert Diam D (ft)	Cross Section Area, a (ft^2)	Wetted Perim. Pw (ft)	Hydraul Radius r (ft)	Channel Slope s (--)	g n (--)	Avg Velocity V (ft/s)	Flow Length L (ft)	Tt_3 (hr)	Tc (hr)	Tc (min)
Basin	0.15	300	5.25	0.0003	**1.58**	U	760	0.00026	0.26	**0.81**	0	0	0	0.00	0	0	0.000	0	**0.00**	**2.39**	**143**

Sheet Flow, $Tt_1 = (0.007(n*L)^{0.8})/(P_2^{0.5}*s^{0.4})$
Where
Tt = travel time (hr)
n = manning's coefficient (TR 55)
L = flow length (ft)
P_2 = 2-year, 24 hour rainfall (in)
s = land slope (ft/ft)

Shallow Concentrated Flow, $Tt_2 = L/(3600*V)$
Where
Tt = travel time (hr)
L = flow length (ft)
V = velocity (ft/s)

Channel Flow, $Tt_3 = L/(3600*V)$
Where
Pw = wetted perimeter (ft)
r = hyraulic radius (ft) = a/Pw
a = cross sectional area of flow (ft^2)
n = manning's coefficient (TR 55)
Tt = travel time (hr)
s = land slope (ft/ft)
L = flow length (ft)
V = velocity (ft/s)

TECO BIG BEND III BESS
Pre-Development

SCS Curve Number, Soil Storage, & Tc Derivation:

1) Natural / Existing Condition:

a) Drainage Area = 11.98 acre
b) Impervious Area = 0.10 acre
c) % Impervious = 1% 98 CN
d) %Pervious = 99% 68 CN
e) Soil Type:

	Percentag	Num.	Name	Soil Group	Curve Number
1)	7.0%	5	Basinger, Holopaw, and Samsula Soils, Depressional	A/D	68
2)	93.0%	57	Wabasso Fine Sand, 0 to 2 Percent Slopes	A/D	68

Soil Group from USDA Hillsborough County Soil Survey
Curve numbers from TR 55 Table 2-2a Open Space, Poor Condition

f) Weighted Calculation:
CN = 68

g) Soil Storage: (S)
S = (1000/CN) - 10 = 4.65 in

h) Time of Concentration (Tc):
Tc = 143 min

TECO BIG BEND III BESS
Pre-Development

Land Use Summary	
Description	**Acres**
Impervious	
BESS	4.23 ac
Access Paths	0.20 ac
Total Impervious	**4.43 ac**
Pervious	
Stormwater Treatment Area	1.44 ac
Swales	0.89 ac
Open Space	5.22 ac
Total Pervious	**7.55 ac**
Total Area	**11.98 ac**
Basin Area	**11.98 ac**

TECO BIG BEND III BESS
POST-DEVELOPMENT BASIN TIME OF CONCENTRATION (Tc)

BASIN	SHEET FLOW					SHALLOW CONCENTRATED FLOW					CHANNEL FLOW									Tc	
ID #	Manning n (--)	Flow Length L (ft)	2-Year 24-Hour Rain, P2 (in)	Land Slope s (--)	Tt_1 (hr)	Paved or Unpaved (P or U)	Flow Length L (ft)	Water-course Slope, s (--)	Avg Velocity V (ft/s)	Tt_2 (hr)	Culvert Diam D (ft)	Cross Section Area, a (ft^2)	Wetted Perim. Pw (ft)	Hydraul Radius r (ft)	Channel Slope s (--)	Manning n (--)	Avg Velocity V (ft/s)	Flow Length L (ft)	Tt_3 (hr)	Tc (hr)	Tc (min)
Basin	0.24	300	5.25	0.002	**1.21**	U	760	0.002	0.66	**0.32**	0	104	80.4	1.29	0.005	0.05	1.144	0	**0.00**	**1.53**	**92**

Sheet Flow, $Tt_1 = (0.007(n*L)^{0.8})/(P_2^{0.5}*s^{0.4})$
Where
Tt = travel time (hr)
n = manning's coefficient (TR 55)
L = flow length (ft)
P_2 = 2-year, 24 hour rainfall (in)
s = land slope (ft/ft)

Shallow Concentrated Flow, $Tt_2 = L/(3600*V)$
Where
Tt = travel time (hr)
L = flow length (ft)
V = velocity (ft/s)

Channel Flow, $Tt_3 = L/(3600*V)$
Where
Pw = wetted perimeter (ft)
r = hyraulic radius (ft) = a/Pw
a = cross sectional area of flow (ft^2)
n = manning's coefficient (TR 55)
Tt = travel time (hr)
s = land slope (ft/ft)
L = flow length (ft)
V = velocity (ft/s)

TECO BIG BEND III BESS
Post-Development Basin

SCS Curve Number, Soil Storage, & Tc Derivation:

1) Natural / Existing Condition:

a) Drainage Area = 11.98 acre
b) Impervious Area = 0.10 acre
c) % Impervious = 1% 98 CN
d) %Pervious = 99% 68 CN
e) Soil Type:

	Percentag	Num.	Name	Soil Group	Curve Number
1)	7.0%	5	Riviera Fine Sand	A/D	68
2)	93.0%	57	Winder Loamy Sand	A/D	68

Soil Group from USDA Hillsborough County Soil Survey
Curve numbers from TR 55 Table 2-2a Open Space, Poor Condition

f) Weighted Calculation:
CN = 68

g) Soil Storage: (S)
S = (1000/CN) - 10 = 4.65 in

h) Time of Concentration (Tc):
Tc = 143 min

2) Post-Development Condition:

Curve numbers from TR 55 Table 2-2a Open Space, Good Condition

	Percentag	Num.	Name	Soil Group	Curve Number
1)	7.0%	5	Riviera Fine Sand	A/D	39
2)	93.0%	57	Winder Loamy Sand	A/D	39

a) Drainage Area = 11.98 acre
b) Impervious Area = 4.43 acre
c) % Impervious = 36.96% 98 CN
d) Pervious Area = 7.55 acre 39 CN
e) Weighted Calculation:
CN = 61

f) Soil Storage: (S)
S = (1000/CN) - 10 = 6.45 in

g) Time of Concentration (Tc):
Tc = 92 min

TECO BIG BEND III BESS

WATER QUALITY ANALYSIS

1 FDEP/SWFWMD Water Quality Criteria:

a. If the project area falls within a stream, coastal, or open-lake watershed and the discharge is to any class of water other than an Outstanding Florida Water, the minimum stormwater treatment volume shall be the runoff from the first 1.0 inch of rainfall from the design storm.

b. As per previous agreement with FDEP, water quality treatment will be provided for 1.00" over the added impervious areas.

2 Required Water Quality Volume:

a. Rainfall, P = 1.00 in
Rainfall, P = 0.08 ft

b. WQ Added Impervious Area = Total Impervious Area = Ac.
WQ Added Impervious Area = 4.43 = 4.43 Ac.

c. WQ Required Volume = P (ft) x WQ Area (ac.) = ac-ft
WQ Required Volume = 0.08 x 4.43 = 0.37 ac-ft

Required WQ Volume = 0.37 ac-ft

TECO BIG BEND III BESS

STAGE vs STORAGE

Basin
Post-Development

Basin Stage Ranges and Areas Data		
Description	STA Bottom	STA Bank
Acres =	1.10	0.33
Low Rng =	7.20	7.20
High Rng =	----	10.20
Begin Stage Calculations =		7.20
End Stage Calculations =		10.20

STAGE vs. STORAGE

Storage Type Stage (NAVD)	STA Bottom Vertical Storage (ac.ft.)	STA Bottom Vertical Area (ac.)	STA Bank Linear Storage (ac.ft.)	STA Bank Linear Area (ac.)	Total Cumulative Storage (ac.ft.)	Total Area (ac)
7.20	0.00	1.10	0.00	0.00	**0.00**	**1.10**
7.70	0.55	1.10	0.01	0.06	**0.56**	**1.15**
8.20	1.10	1.10	0.06	0.11	**1.15**	**1.21**
8.70	1.64	1.10	0.13	0.17	**1.77**	**1.26**
9.20	2.19	1.10	0.22	0.22	**2.41**	**1.32**
9.70	2.74	1.10	0.35	0.28	**3.09**	**1.37**
10.20	3.29	1.10	0.50	0.33	**3.79**	**1.43**

Complete Report (not including cost) Ver 4.3.5

Project: Big Bend 3 BESS
Date: 12/12/2025 2:06:35 PM

Site and Catchment Information

Analysis: BMP Analysis

Catchment Name	BBIII BESS
Rainfall Zone	Florida Zone 4
Annual Mean Rainfall	53.00

Pre-Condition Landuse Information

Landuse	Undeveloped - Scrubby Flatwoods: TN=1.155 TP=0.027
Area (acres)	11.98
Rational Coefficient (0-1)	0.82
Non DCIA Curve Number	68.00
DCIA Percent (0-100)	100.00
Nitrogen EMC (mg/l)	1.155
Phosphorus EMC (mg/l)	0.027
Runoff Volume (ac-ft/yr)	43.546
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000
Nitrogen Loading (kg/yr)	62.015
Phosphorus Loading (kg/yr)	1.450

Post-Condition Landuse Information

Landuse	Low-Intensity Commercial: TN=1.13 TP=0.188
Area (acres)	11.98
Rational Coefficient (0-1)	0.60
Non DCIA Curve Number	68.00
DCIA Percent (0-100)	71.00
Wet Pond Area (ac)	0.00
Nitrogen EMC (mg/l)	1.130
Phosphorus EMC (mg/l)	0.188
Runoff Volume (ac-ft/yr)	31.914
Groundwater N (kg/yr)	0.000
Groundwater P (kg/yr)	0.000

Nitrogen Loading (kg/yr)	44.466
Phosphorus Loading (kg/yr)	7.398

Catchment Number: 1 Name: BBIII BESS

Project: Big Bend 3 BESS
Date: 12/12/2025

Multiple BMP in Series Design Parameters

BMP in Series Number: 1
BMP Type: Vegetated Natural Buffer

Buffer Width (ft)	30.000
Buffer Length (ft)	1,900.000
Storage Depth (ft)	0.500
Width of Area Feeding Buffer (ft)	145.000
Water storage capacity of soil (in/in)	2.540
Slope of Bufer Width (2%-6%)	2.000

BMP in Series Number: 2
BMP Type: Swale

Swale Top Width for Flood Conditions - **W** (ft)	16.000
Swale Bottom Width - **B** (ft)	4.000
Swale Length - **L** (ft)	1,900.000
Average Impervious Length (ft)	1,900.000
Average Impervious Width (ft)	145.000
Average Pervious Width (ft)	191.000
Swale Slope (foot drop/foot length) - **S**	0.250
Mannings N	0.240
Soil Infiltration Rate (in/hr)	0.500
Side Slope of Swale horizontal/vertical - **Z**	4.000
Average Height of Swale Block - **H**	0.150
Length of Berm Upstream of Crest - $\mathbf{L_b}$	0.000
Runoff Area (acres)	14.656
Number of Swale Blocks	5

BMP in Series Number: 3
BMP Type: Retention

Retention Depth (in)	0.370
Retention Volume (ac-ft)	0.369

BMP in Series Number: 4
BMP Type: None

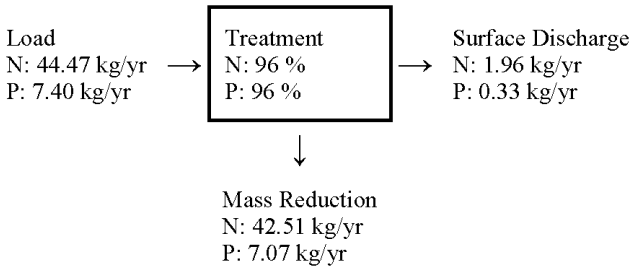
Watershed Characteristics

Catchment Area (acres)	11.98
Contributing Area (acres)	11.980
Non-DCIA Curve Number	68.00
DCIA Percent	71.00
Rainfall Zone	Florida Zone 4
Rainfall (in)	53.00

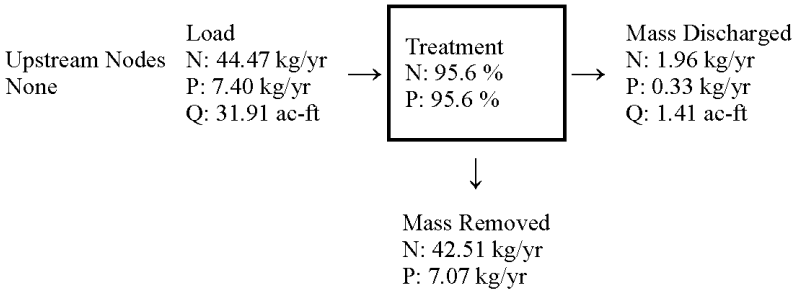
Surface Water Discharge

Required TN Treatment Efficiency (%)	
Provided TN Treatment Efficiency (%)	96
Required TP Treatment Efficiency (%)	
Provided TP Treatment Efficiency (%)	96

Load for Multiple BMP in Series



Load Diagram for Multiple BMP (As Used In Routing)



Summary Treatment Report Version: 4.3.5

Project: Big Bend 3 BESS

Analysis Type: BMP Analysis
Date:12/12/2025

BMP Types:
Catchment 1 - (BBIII BESS)
Multiple BMP
Based on % removal values to the nearest percent

Routing Summary
Catchment 1 Routed to Outlet

Summary Report

Nitrogen

Surface Water Discharge		
Total N post load	44.47 kg/yr	
Percent N load reduction	96 %	
Provided N discharge load	1.96 kg/yr	4.32 lb/yr
Provided N load removed	42.51 kg/yr	93.73 lb/yr

Phosphorus

Surface Water Discharge		
Total P post load	7.398 kg/yr	
Percent P load reduction	96 %	
Provided P discharge load	.326 kg/yr	.72 lb/yr
Provided P load removed	7.072 kg/yr	15.594 lb/yr

9.2.2 Calculating Predevelopment and Post-development Stormwater Nutrient Loading

a. To calculate the predevelopment and post development loadings before treatment of the annual mass loadings for TN and TP, multiply the predevelopment annual runoff volume (derived in Section 9.2.1) by the land use specific runoff characterization data (event mean concentrations or EMCs) for TN and TP. Applicants must use the most up-to-date verified EMC values, where available and incorporated by reference pursuant to rule 62.330.301(4), for their project region. Applicants also must comply with the applicable special basin or geographic area criteria in rule 62-330.301(1)(k), F.A.C., including any EMC values specified in the applicable Applicant's Handbook Volume II. EMC Values are listed in Table 9.2 for different types of land use categories. EMC values for the land uses must consider cover, soils, and topography and be representative of the latest assigned Florida Land Use and Cover Classification System (FLUCCS) code.

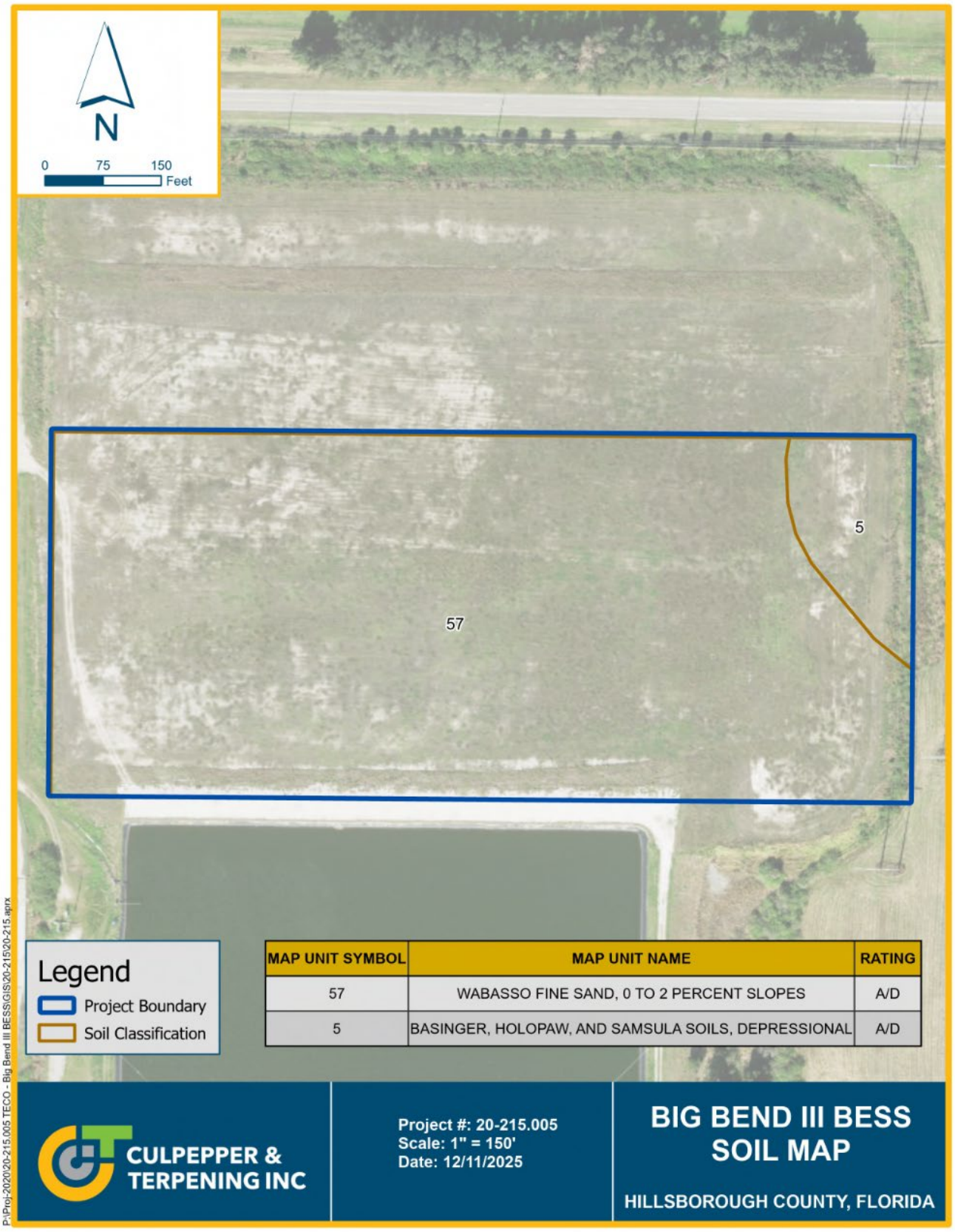
Table 9.2 Standardized Statewide Stormwater Nutrient EMC Values

Land Use Category	Total N (mg/l)	Total P (mg/l)
Low Density Residential	1.65	0.270
Single Family	1.77	0.327
Multi-Family	1.84	0.320
Low Intensity Commercial	0.93	0.19
High Intensity Commercial	2.40	0.345
Light Industrial	1.20	0.260
Highway	1.25	0.173
Dry Prairie	2.025	0.184
Marl Prairie	0.684	0.012
Mesic Flatwoods	1.087	0.043
Ruderal/Upland Pine	1.694	0.162
Scrubby Flatwoods	1.155	0.027
Upland Hardwood	1.042	0.346
Upland Mixed Forest	0.606	1.166
Wet Flatwoods	1.213	0.021
Wet Prairie	1.095	0.015
Xeric Scrub	1.596	0.156
Rangeland/parkland	1.150	0.055
General Agricultural	2.29	0.381
Pasture	3.03	0.593
Citrus	2.11	0.180
Row Crops	2.50	0.577

b. At the time of the application, an applicant may propose to use TN and TP EMC values accepted by the Agency which denote EMC values derived from regional or local government studies. Any study conducted must be submitted with the permit application for the Agency records. If EMC values from a study are to be used, data collected must follow quality assurance provisions outlined in chapter 62-160, F.A.C., and include:

- Data collected at a representative variety of rainfall depths;
- Minimum of 10 rainfall events;
- Minimum of one year of data with seasonal variation;
- Use of autosamplers to allow for runoff to be sampled for the duration of the rainfall event;
- Volume or time weighted composite samples;

Appendix 2 – Soils Exhibit



MAP UNIT SYMBOL	MAP UNIT NAME	RATING
57	WABASSO FINE SAND, 0 TO 2 PERCENT SLOPES	A/D
5	BASINGER, HOLOPAW, AND SAMSULA SOILS, DEPRESSIONAL	A/D