Major Site Plan
Application

OFFICIAL USE ONLY:
Case Number: _____
Date Filed: _____
Gate Keeper: _____
Amount Paid: _____

Contact Information

APPLICANT:
Name: H2OBX, LLC
Address: 13 Green Mountain Drive
Cohoes, NY 12047
Telephone: 518-783-0038
E-Mail Address: kene@aquaticgroup.com

PROPERTY OWNER:
Name: H2OBX, LLC
Address: 13 Green Mountain Drive
Cohoes, NY 12047
Telephone: 518-783-0038
E-Mail Address: kene@aquaticgroup.com

LEGAL RELATIONSHIP OF APPLICANT TO PROPERTY OWNER: Same

Property Information

Physical Street Address: 8526 Caratoke Hwy
Location: Powells Point, Currituck County, North Carolina
Parcel Identification Number(s): 0124000137L0000; 9837-54-9004
Total Parcel(s) Acreage: 96.77
Existing Land Use of Property: Recreational Facilities & Vacant

Request

Project Name: H2OBX RV Resort
Proposed Use of the Property: ~~Recreational Facility~~ Private Campground
Deed Book/Page Number and/or Plat Cabinet/Slide Number: DB 1512 Pg 459; PB 9 Pg 207
Total square footage of land disturbance activity: 60.5 acres
Total lot coverage: 856,210 sf *within campground designated area only
Total vehicular use area: 591,605 sf
Existing gross floor area: 2,640 sf
Proposed gross floor area: 7,220 sf

I hereby authorize county officials to enter my property for the purpose of determining zoning compliance. All information submitted and required as part of this process shall become public record.

Applicant _____ Date 9/24/24

Property Owner(s) _____ Date 9/24/24

***NOTE: Form must be signed by the owner(s) of record, contract purchaser(s), or other person(s) having a recognized property interest. If there are multiple property owners/applicants a signature is required for each.**

Major Site Plan Submittal Checklist

Staff will use the following checklist to determine the completeness of your application within ten business days of submittal. Please make sure all of the listed items are included. Staff shall not process an application for further review until it is determined to be complete.

Major Site Plan

Submittal Checklist

Date Received: _____ TRC Date: _____

Project Name: H2OBX RV Resort

Applicant/Property Owner: H2OBX, LLC

Major Site Plan Submittal Checklist – Documents provided on USB flash drive or CD		
1	Complete Major Site Plan application	X
2	Site plan	X
3	Landscape plan	X
4	Exterior Lighting plan	X
5	Stormwater Review Fee Deposit (see fee schedule) and Major Stormwater Management plan and Form SW-002 ACKNOWLEDGED. TO BE PROVIDED UPON RECEIPT OF INVOICE	
6	Architectural elevations, if applicable	X
7	ARHS site evaluation(s) OR if connecting to existing wastewater system, a letter of commitment from owner of centralized sewer provider and letter from DWQ indicating the existing plant has sufficient capacity to serve the development at the time of site plan approval.	X
8	NCDEQ stormwater permit application (if 10,000 sf or more of built upon area). DRAFT	X
9	NCDEQ Erosion and Sedimentation Control permit application (if one acre or more of land disturbance). DRAFT PROVIDED	X
10	NCDOT Street and Driveway Access Permit Application and Encroachment Agreement	N/A
11	Application fee ($.15 per square foot of gross floor area or $500 minimum)	X

For Staff Only

Pre-application Conference

Pre-application Conference was held on _____ and the following people were present:

_____

_____

Comments

_____

_____

Major Site Plan Design Standards Checklist

The table below depicts the design standards of the major site plan application. Please make sure to include all applicable listed items to ensure all appropriate standards are reviewed.

Major Site Plan

Design Standards Checklist

Date Received: _____ TRC Date: _____

Project Name: H2OBX RV Park

Applicant/Property Owner: H2OBX, LLC

Site Plan Design Standards Checklist		
General		
1	Property owner name, address, phone number, and e-mail address.	✓
2	Site address and parcel identification number.	✓
3	North arrow and scale to be 1" = 100' or larger.	✓
4	Vicinity map showing property's general location in relation to streets, railroads, and waterways.	✓
5	Existing zoning classification and zoning setback lines of the property.	✓
6	Scaled drawing showing existing and proposed **site features:** Property lines, acreage, adjacent use types, streets (right-of-ways), easements, buildings and accessory structures (including square feet and use), parking layout, vehicular use areas, driveways (including opposing driveways), loading spaces, refuse collection facilities (dumpsters), outdoor storage areas, ground based utility equipment, fences and walls, and sidewalks and pedestrian circulation. And location and size of existing and proposed **infrastructure:** Water mains (including and water taps), water meter details, backflow prevention details, wells, sewer mains or on-site septic systems (including repair area), electrical service, fire hydrants, detail of fire apparatus access to buildings, and any other public utility within all adjacent public right-of-ways and easements.	✓
7	Approximate location of all designated Areas of Environmental Concern or other such areas which are environmentally sensitive on the property, such as Maritime Forest, CAMA, 404, or 401 wetlands as defined by the appropriate agency.	✓
8	Sight distance triangles.	N/A
9	Proposed common areas, open space set-asides, and required buffers.	✓
Landscape Plan		
10	All existing and proposed planting areas and vegetation that will be used to comply with the landscaping requirements, including the species, caliper, and spacing of all vegetation.	✓
11	Existing and proposed physical barriers to be used to comply with the bufferyard and screening requirements.	✓
12	Heritage tree inventory and proposed tree protection zones.	✓
13	Adjoining property lines, zoning, and names and address of adjoining property owners.	✓
Exterior Lighting Plan		
14	Location, height, and type of all proposed exterior lighting including but not limited to site, street, building, and security lighting.	✓
15	Footcandle measurements of the entire site including lot lines, or light fixture documentation when minimal lighting is proposed.	✓
Major Stormwater Management Plan		
16	Major Stormwater Plan and Form SW-002	✓

	Architectural Elevations	
17	Architectural drawings and/or sketches illustrating the design, character, height, and materials of the proposed buildings.	/
	Flood Damage Prevention, if Applicable	
18	Proposed elevation of all structures and utilities.	/
19	Location, dimensions, and use of: Development and disturbance, existing and proposed structures and utility systems grading and pavement areas, fill materials, storage areas, drainage facilities, and other development.	/
20	Boundary of Special Flood Hazard Area (SFHA), floodway, Coastal Barrier Resource System (CBRS) Area, water course relocation, or a statement that the entire lot is within a specific SFHA.	N/A
21	Flood zone designation as determined on the County's Flood Insurance Rate Maps (FIRM).	/
22	Design Flood Elevation (Base Flood Elevation plus two-foot freeboard).	/
23	Plans and/or details for the protection of public facilities and utilities (sewer, gas, electrical, and water systems) from inundation of flood waters up to Design Flood Elevation.	/
24	Water course alteration or relocation: Description of alteration or relocation, report on effects of proposed project on the flood carrying capacity of the water course, and effects to properties located up and downstream.	N/A
25	Fill – plans for non-structural fill (if being utilized in VE zone).	N/A

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October 24, 2024

Ms. Jennie Turner
Currituck County
Planning & Community Development
153 Courthouse Road, Suite 110
Currituck, North Carolina 27949

RE: Major Site Plan Application - Resubmittal
H2OBX RV Resort
Currituck County, North Carolina

Dear Ms. Turner;

Thank you for your comments on the above-referenced project. On behalf of H2OBX,LLC, WithersRavenel hereby submits for your review revised documents.

The following digital documents are included and shall be considered part of this submittal package:

1. One (1) copy of the revised Major Site Plan Application;
2. One (1) Copy of an email from Dominion Encroachment reviewer confirming initial review and DRAFT application;
3. One (1) copy of the revised Site Plan, including Landscaping;
4. One (1) copy of the Drainage Area Maps;
5. One (1) copy of the previously reviewed/approved Currituck County stormwater storage calculations for the waterpark designated area;
6. One (1) copy of revised Lighting Plan;
7. One (1) copy of the USGS Web Soil Survey;
8. One (1) copy of letter from DWR with regard to the downstream WWTP;
9. One (1) copy of the revised H2OBX RV Resort Operational Plan;

A copy of the TRC review comments dated October 10, 2024, are enclosed for reference, and our responses listed below for ease of review. Please note preparation and review of State packages and encroachment agreements are ongoing.

Planning (Millicent Ott, 252-232-6066)

1. On application, please correct proposed use to “Private Campground”. *Acknowledged. Please see the updated Major Site Plan Application attached as a part of this application.*

2. Prior to site plan approval, provide all required state permits. *Acknowledged. State permits are being compiled and applied for concurrent with County Site plan review. WithersRavenel will provide the permits to the county upon their approval.*

3. Inspection for compliance with the approved conditional zoning and operational plan shall be required prior to obtaining a licensure from the County. It shall be the responsibility of the campground operator to apply for renewal of the license and schedule the inspection with county staff prior to designated opening date. *Acknowledged. The Owner will schedule the inspection and apply for renewal of the license at the appropriate time.*

4. "Private Access-Not for campground use" signage shall be placed where Ballast Rock Road terminates. *Acknowledged. Please see sheet 5 of the plan set requiring sign to state, "Private Access-Not for campground use."*

5. Per the conditional rezoning condition 6: traffic study be conducted by the applicant prior to site plan approval, please provide an update. Provide written comments from NCDOT on the revised TIA. Will NCDOT require a more recent TIA? *Acknowledged. It Is understood that Currituck County reached out to NCDOT directly on October 9th for their comments on the Traffic Impact Analysis in addition to the original email sent to NCDOT on September 9th by Kimley-Horn. We are still awaiting a formal response.*

6. Please provide written permission from VEPCO/Dominion Power to build on their easement. Clarify proposed use within easement. *Acknowledged. Please see the attached DRAFT application. Dominion has preliminarily reviewed the site and stated there are no anticipated issues with the 15' wide asphalt path or water service line traversing their easement. The proposed use within the easement is an access trail for pedestrian access between the campground and waterpark.*

7. Please ensure the plan is consistent with conditional rezoning narrative, and site plan narrative submitted. *Acknowledged. The plan has been reviewed for consistency with the conditional rezoning narrative and site plan narrative submitted.*

8. Please provide a detailed operational plan per UDO Section 4.2.4.J(3)(h). Staff understands that this may change prior to final approval and issuance of the license. Changes will be reviewed prior to license issuance. Include opening and closing dates *Acknowledged. Please see the attached operational plan that adheres to UDO Section 4.2.4.J(3)(h) and includes opening and closing dates.*

9. Please number and delineate all parking spaces, and provide overall density calculations. *Acknowledged. Numbered and delineated parking spaces along with overall density calculations are shown on sheets 4 & 5.*

10. Provide and designate the type of each campsite per UDO Section 4.2.4.J(3)(g)(vii).

    a. Include percentage of camping cabins or alternative camping units *Acknowledged. See sheet 4 for percentage calculations.*

    b. Include seasonal or short-term designation for each campsite *Acknowledged. See note on sheet 4 stating the maximum number of seasonal campsites.*

11. Please provide a canopy tree within 60' of all parking spaces. *Acknowledged. Please see the proposed landscaping shown on sheets 4&5 showing a canopy tree within 60' of all parking spaces.*

12. Provide more detail on required buffers and landscaping, including locations, and plant types. *Acknowledged. Please see the required buffers, landscaping, and planting schedule shown on sheets 4 & 5.*

13. Provide photometric plan for building lighting, and security lighting. *Acknowledged. Please see the attached revised photometric plan included with this application.*

14. Consider installation of bike racks where appropriate. *Acknowledged. Bike racks have been shown on Sheet 4 adjacent to the amenity area.*

15. Dumpster pad must be on 6" thick concrete. Include detail on plan. *Acknowledged. Please see the concrete dumpster pad on sheet 5.*

16. Please shift the golfcart parking to the designated campground area or buffer additional area adjacent to the proposed golf cart parking. *Golfcart parking has been shifted within the "Campground Designation Boundary" Although it is golfcart parking, we have provided vehicular use landscaping to assist with the screening concern. It will also be behind the 50' buffer.*

17. Are there any heritage trees currently on the property? Provide verification *WithersRavenel staff visited the site on 10/14/24 and field verified that there are no Heritage Trees within the proposed limits of disturbance. A note has been added to Sheet 4 & 5 to state "HERITAGE TREE REMOVAL/MITIGATION IS NOT PROPOSED"*

18. Please provide a detailed fence and wall plan. *Acknowledged. Please see the fence layout and detail on sheet 5.*

19. Are any storage areas proposed for rvs, boats, watercraft, and associated trailers? If so, please show on plan per UDO Section 4.2.4.J.(3)(g)(ii) *Acknowledged. There are no proposed storage areas for RV's, boats, watercraft and associated trailers.*

Currituck County Building and Fire Inspections (Rick Godsey, 252-232-6020)

1. Indicate needed hydrant impact protection where no curb protection is present. *Acknowledged. Please see sheets 4&5 which show proposed bollards around all hydrants where there is no curb protection.*

2. Proposed maintenance building will need a hydrant within 400ft of all points on building if no sprinkler system installed. *Acknowledged. A fire hydrant has now been provided interior to the maintenance yard to protect the maintenance building and existing WWTP building. It is understood that a knox box will be required for access to the proposed security fencing.*

3. Knox Box will be required for emergency access to all structures. *Acknowledged.*

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Currituck County Public Utilities – Mainland Water (Chas Sawyer 252-202-1692)

1. The Water Department will not be accepting this as a watermain extension. Everything beyond the meter will be the responsibility of the customer. *Acknowledged.*

Currituck County GIS (Harry Lee 252-232-4039)

1. Will the modular unit lots be platted as individual lots? *No the modular unit lots are not intended to be platted.*

2. Are the modular structures permanently affixed to the ground? *They will be semi-permanent where they can be road ready within a required time limit.*

3. Will Planning require the interior streets to be individually named? *Since these facilities will lay dormant a portion of the year, we do not anticipate a need for mail services at each individual site, we would only anticipate mail service to the main Lodge Facility and we would anticipate a Caratoke Hwy addressed, based on the response to question #4.*

4. Which street is the main access into the site Caratoke Hwy or Ballast Rock Rd? *The site must be accessed from Caratoke Highway and not Ballast Rock.*

US Post Office

Contact the local post office for mail delivery requirements *Acknowledged.*

Stormwater Consultant, McAdams (Daniel Wiebke, 919-361-5000)

1. Please provide a map indicating the locations where peak flow analysis is taking place. *Please see drainage area maps for peak flow analysis locations.*

2. Please provide more detailed quantification of impervious for existing and proposed conditions. *Please see drainage area maps for additional information on proposed impervious coverage.*

3. Please provide existing impervious quantification similarly to how proposed impervious quantification was provided. Will all existing impervious be demolished and replaced? *Only the existing asphalt millings areas at the site are proposed to be demolished within DA-5.* Is existing impervious included in the proposed impervious quantifications? *Please see drainage area maps for additional information on proposed impervious coverage. It should be noted that existing impervious coverage within the waterpark designation does not anticipate changes. A copy of the County previously reviewed/approved stormwater storage calculations have been included for reference.*

4. It is unclear which areas are going to be demolished in the existing conditions plan. There are no areas that match the indicated hatch. Please verify which areas will be demolished and quantify the items that are to be demolished. *Acknowledged. This is the entire extents of the "construction debris, gravel, and asphalt millings" as shown on existing conditions Sheet 2 called out to be removed. The removal hatch has been added.*

5. How was this number calculated? Please provide representation and callouts on the existing condition map to reference. *The existing impervious to be removed within DA-5 in the table below was calculated by survey data of the existing asphalt millings internal to the site. The previously permitted drainage areas ex. impervious (an all associated square footages) came from the previously reviewed and approved site plan on file with the County.*

NCDEQ Stormwater Calculations

Drainage Area Calculations

	Previously Permitted Drainage Area		DA-5	
	(sq.ft.)	(acre)	(sq.ft.)	(acre)
Drainage Area =	1,789,453.00	41.08	877,932.00	20.15
Open Space	707,962.00	16.25	0.00	0.00
Pond =	153,011.00	3.51	0.00	0.00
Buildings =			10,962.00	0.25
Asphalt =			454,620.00	10.44
Concrete Pads =			23,399.70	0.54
Ex. Impervious =	928,460.00	21.31	0.00	0.00
Ex. Impervious (to be removed) =	557,077.50	12.79	251,526.50	5.77
Total Treated Impervious (less existing) =	524,393.50	12.04	237,455.20	5.45

6. For land use that is not part of the campground designation, is it considered 'offsite' area? Is it draining onsite or offsite? How does this affect the numbers? *Please note the entirety of the waterpark drains to the permitted wet pond (with the exception of the fire access road that is treated within a permitted infiltration basin DA-2a). There are no areas designated as offsite as the entirety (campground and waterpark) are under the same ownership and the same State stormwater permit. This coverage is included within the stormwater calculation numbers. To help clarify this, the proposed asphalt walking path in between the campground and waterpark is sloped to drain towards the RV sites and spot shots have been added. A swale and associated grades have been shown to clearly show it will be routed through the campground forebay.*

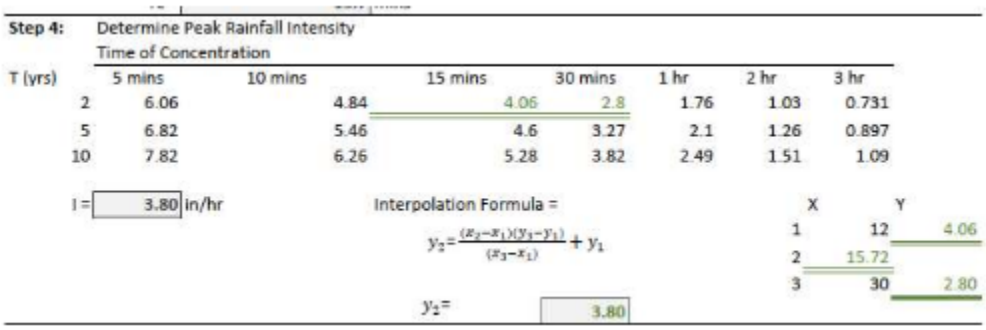
7. Please provide a drainage area map with clear delineations of which areas are draining to which SCMs, including callouts for quantities of cover conditions for each drainage area, as well as existing and proposed contours and time of concentration paths. It is currently unclear which areas are draining to which SCM. *Acknowledged. This has been provided.*

8. Please provide a soil map. It is missing from Appendix 3. *Acknowledged. The soil map has been included.*

9. Please provide locations and dimensions, including invert elevations, of outlet structures within the SCMs. *Acknowledged. This has been provided. Please note the overflow within the*

wetpond is to remain as is. Infiltration basins are designed to discharge over emergency overflow weirs.

10. Rainfall intensity values used for peak flow calculations in Appendix 4 do not match the rainfall intensity values provided in Appendix 2. *Acknowledged. Please note that the Currituck County Stormwater manual section 2.4.3 dictates the intensities listed in the table for this specific calculation. The intensities provided within Appendix 2 are from the NOAA website for Currituck County.*



Step 4: Determine Peak Rainfall Intensity

Time of Concentration

T (yrs)	5 mins	10 mins	15 mins	30 mins	1 hr	2 hr	3 hr
2	6.06	4.84	4.06	2.8	1.76	1.03	0.731
5	6.82	5.46	4.6	3.27	2.1	1.26	0.897
10	7.82	6.26	5.28	3.82	2.49	1.51	1.09

I = 3.80 in/hr

Interpolation Formula =

$$y_2=\frac{(x_2-x_1)(y_3-y_1)}{(x_3-x_1)}+y_1$$

y_2= 3.80

X	Y
1	12	4.06
2	15.72	
3	30	2.80

11. Please provide elevations for the existing and proposed contours in the grading and drainage map. *Acknowledged. These have been added throughout the plan set.*

12. Permeable pavement is an identified hatch in the legend of the grading and drainage plan, but not in the land covers shown in the exhibit. Where is the permeable pavement located? Is it contributing to detention? *The owner has decided against permeable pavement at this time and it has been removed from the legend.*

13. Please clarify the location of the vegetated shelf, as it is not clear in the drawings the extents and elevation. *Acknowledged. The entire basin is now shown as being regraded per the original permit documents. This is for clarity and to confirm the basin is cleaned out to original permitted design elevations.*

14. Please label all SCMs in the plans in accordance with their designations in the narrative and calculation sheets. It is unclear which SCMs are which. *Acknowledged and updated as requested.*

15. Please show entirety of forebay and main pool for the wet detention basin. *Acknowledged and updated.*

16. For non-jurisdictional wetlands, it is recommended that they are filled if proposed construction will be done within the wetland. *Acknowledged. Wetlands fill is now called out on the existing conditions sheet.*

17. Per the MDC for wet detention basins, inlets are not permitted to drain directly into the main pool and will require a forebay. *Acknowledged. This section has been rerouted towards the forebay.*

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Please review the enclosed documents and our above responses at your earliest convenience. Please do not hesitate to contact me at (252) 491-8147 or csaunders@quible.com should you have any questions or require any additional information

Sincerely,
WithersRavenel

Cathleen M. Saunders, P.E.
Senior Project Manager

Dominion Energy Virginia/North Carolina

Encroachment Request Application

Requestor Information

Full Name: Ellis (Last) Kenneth (First) (M.I.) Title: CEO

Address: 13 Green Mountain Drive (Street Address) (Apartment/Unit #)

Cohoes (City) NY (State) 12047 (ZIP Code)

Phone: 518-369-2422 Email: kene@aquaticgroup.com

Company Name: H2OBX, LLC

The information above is for the Authorized Representative who will be signing the agreement and responsible for any fees associated with this request

Point of Contact (*Leave blank if the same as the Requestor)*

Full Name: Cathleen (Last) Saunders (First) M. (M.I.) Title: P.E.

Phone: 919-469-3340 Email: csaunders@withersravenel.com

Company Name: WithersRavenel

Location of Encroachment

Street Address: 8526 Caratoke Highway

City/County: Powells Point, Currituck State: NC ZIP Code: 27966

Transmission Line No. 2064/158 2073/158 2064/159 2073/159 Structure No. _____ ------ Structure No. _____

Office Use Only

District Office _____ Field Representative _____

Easement Width _____ Plan and Profile(s) _____

Encroachment Description

Check all that apply:

- ☒ Access Road
- ☐ Bike/Pedestrian Trail
- ☐ Culvert(s)
- ☐ Cut/Fill/Grading
- ☐ Distribution Line to Serve Antenna Equipment
- ☐ Distribution Overhead Crossing/Parallel
- ☐ Distribution Underground Crossing/Parallel
- ☐ Drain Field
- ☐ Driveway
- ☐ Fences
- ☐ Fiber Optic Cable Crossing/Parallel
- ☐ Gas Line Crossing/Parallel
- ☐ Landscaping
- ☐ Parking Lot
- ☐ Retaining Wall
- ☐ Road Crossing/Parallel
- ☐ Sewer or Storm Water line Crossing/Parallel
- ☐ Water Line Crossing/Parallel
- ☐ Other:_____

Engineered Drawings Attached

Prepared by: Engineer: Cathleen M. Saunders P.E. Company: WithersRavenel

Date Approved: 10/24/24

Sheet No (s): 1-11

Processing and Impact Fee Amounts (Office Use Only)

Rights of Way Management Processing Fee	_____
Engineering Review Fee (if applicable)	_____
Impact Fee (if applicable)	_____
Forestry Review Fee (if applicable)	_____
Total (Fee calculated in following review)	_____

Disclaimer

All requests to the Company for encroachments must go through a complete review prior to approval. The Company has the right to deny any request that reduces the Company's rights for present and future use of the Company's easements and fee owned property. Requestor must submit final 100% approved plans must be submitted for review prior to an agreement being issued by the Company. Furthermore, the Requestor must submit as-builts at the completion of construction which will be reviewed and verified by a representative of the Company's Rights of Way Management Group.

For additional information visit :
https://www.dominionenergy.com/company/safety/public-safety/right-of-way-use

Contact: Dominion Energy Electric Transmission Right of Way
1(800) 215-8032
Email etrow@dominionenergy.com

Saunders, Cathleen

From: Melissa.Y.Jordan@dominionenergy.com
Sent: Wednesday, October 23, 2024 12:27 PM
To: Saunders, Cathleen
Cc: ETROW@DominionEnergy.com; Corcella, John
Subject: [EXTERNAL] RE: Easement Encroachment - 8526 Caratoke Hwy, Powells Point, NC 27966
Attachments: 2020 dom-guidelines-use-electric-trans-right-of-way-easements (00B).pdf; Encroachment Request examples.docx; Encroachment Application 1.31.2024 (002).pdf; water park line and structure numbers.JPG

Thanks for speaking with me Cathleen and sending the constant agreement for the parking lot.

I have attached the guidelines, application , the line and structure numbers, and the requirements with an example.

We need the following information added to your sketch.

The distance from the structure
The line and structure numbers
Will you please complete the application and review the attached documents.

From: Saunders, Cathleen <csaunders@withersravenel.com>
Sent: Tuesday, October 22, 2024 4:56 PM
To: Melissa Y Jordan (DEV Trans Distribution - 1) <Melissa.Y.Jordan@dominionenergy.com>
Cc: ETROW <etrow@dominionenergy.com>; Corcella, John <jcorcella@withersravenel.com>
Subject: [EXTERNAL] Easement Encroachment - 8526 Caratoke Hwy, Powells Point, NC 27966

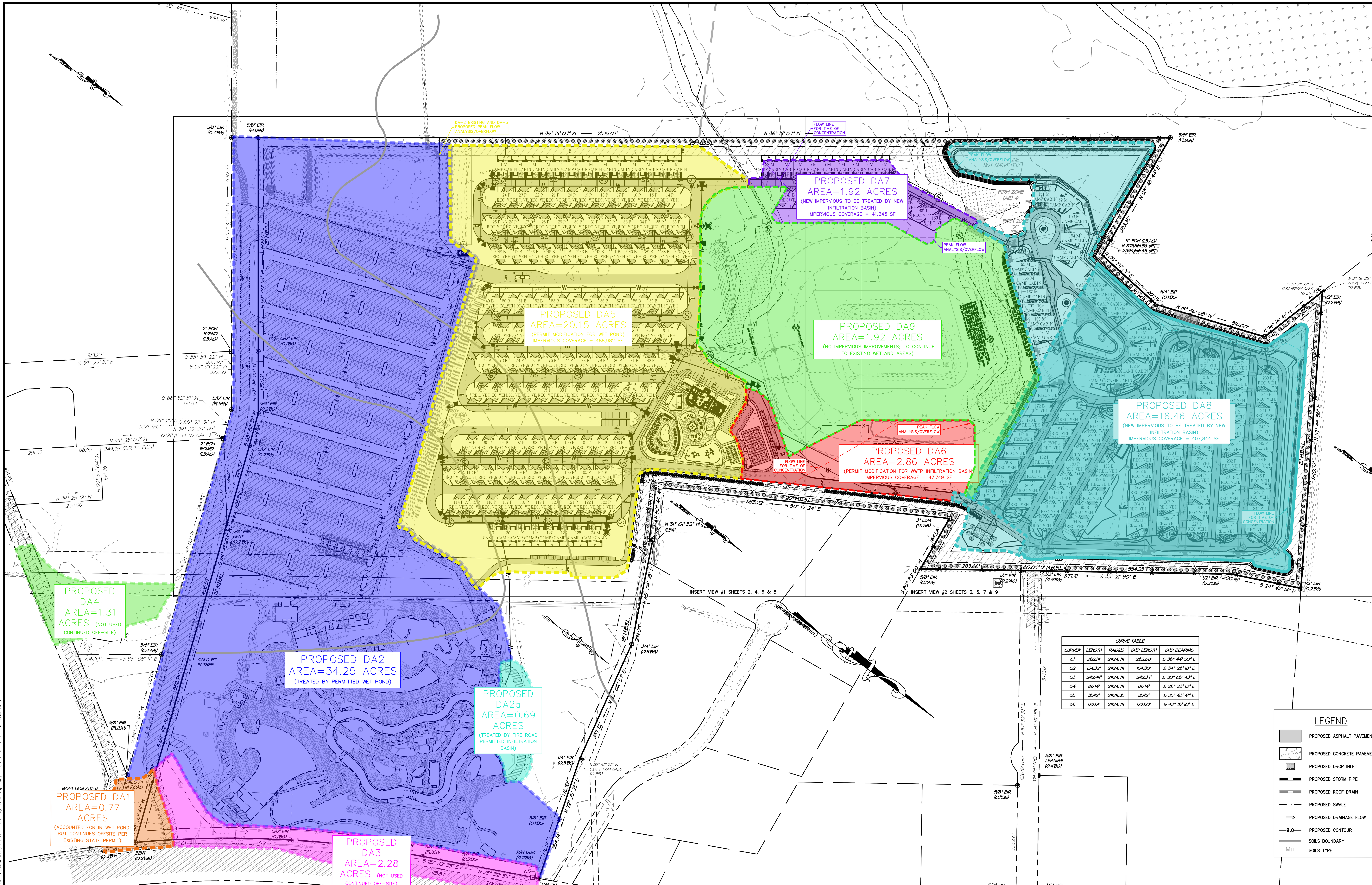
Melissa,
Good afternoon. Not sure if you are still the appropriate person, but we have plans under review by Currituck County which include an asphalt path within the Dominion right-of-way. The subject parcel is located at 8526 Caratoke Hwy, Powells Point, NC 27966. The existing waterpark has existing coverage/development within the easement that is to remain untouched. However, we plan to provide a 15' wide asphalt path and an underground waterline crossing (perpendicular) within the dominion easement. This path and waterline will connect the waterpark to the western portion of the property. Please see attached plan sheet for reference. Can you please let us know if anything additional is needed to review, hopefully approve, and document this encroachment with Dominion?

Thank you,

[withersravenel.com] Cathleen Saunders, P.E. [instagram.com][linkedin.com][facebook.com][twitter.com][youtube.com]

SENIOR
PROJECT
MANAGER

t: 919.469.3340 d: 252.202.7112 Cary, NC [withersravenel.com] WITHERSRAVENEL.COM [withersravenel.com]



CURVE TABLE				
CURVE#	LENGTH	RADIUS	CHD LENGTH	CHD BEARING
C1	282.19'	2924.79'	282.08'	S 38° 44' 50" E
C2	154.32'	2924.79'	154.30'	S 34° 28' 18" E
C3	292.49'	2924.79'	292.37'	S 30° 05' 43" E
C4	86.14'	2924.79'	86.14'	S 26° 23' 12" E
C5	18.92'	2929.35'	18.92'	S 25° 43' 41" E
C6	80.81'	2924.79'	80.80'	S 42° 18' 10" E

LEGEND

- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED DROP INLET
- PROPOSED STORM PIPE
- PROPOSED ROOF DRAIN
- PROPOSED SWALE
- PROPOSED DRAINAGE FLOW
- 9.0 PROPOSED CONTOUR
- SOILS BOUNDARY
- Mu SOILS TYPE

NOTE:
THE DATA GIVEN ON THESE PLANS IS BELIEVED TO BE ACCURATE, BUT THE ACCURACY IS NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL LEVELS, LOCATIONS, TYPES, AND DIMENSIONS OF THE EXISTING UTILITIES PRIOR TO CONSTRUCTION. IF A DISCREPANCY IS FOUND, WORK SHALL CEASE AND THE ENGINEER NOTIFIED. WORK MAY CONTINUE UPON ENGINEERS NOTICE TO PROCEED.

811 Know what's below. Call before you dig.

NC License#: C-0208
Quible & Associates, P.C.
SINCE 1959
ENGINEERING** * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING**
SURVEYING NOT OFFERED AT BLACK MTN. OFFICE
8466 CARATOKE HWY
BLDG 400
POWELLS POINT, NC 27966
Phone: (252) 491-8147
administrator@quible.com
90 CHURCH STREET
SUITE B
BLACK MOUNTAIN, NC 28711
Phone: (828) 357-5149
administrator@quible.com

PRELIMINARY NOT FOR CONSTRUCTION

CERTIFICATION

REVISIONS

NO.	DATE	

POST DEVELOPED DRAINAGE AREA MAP

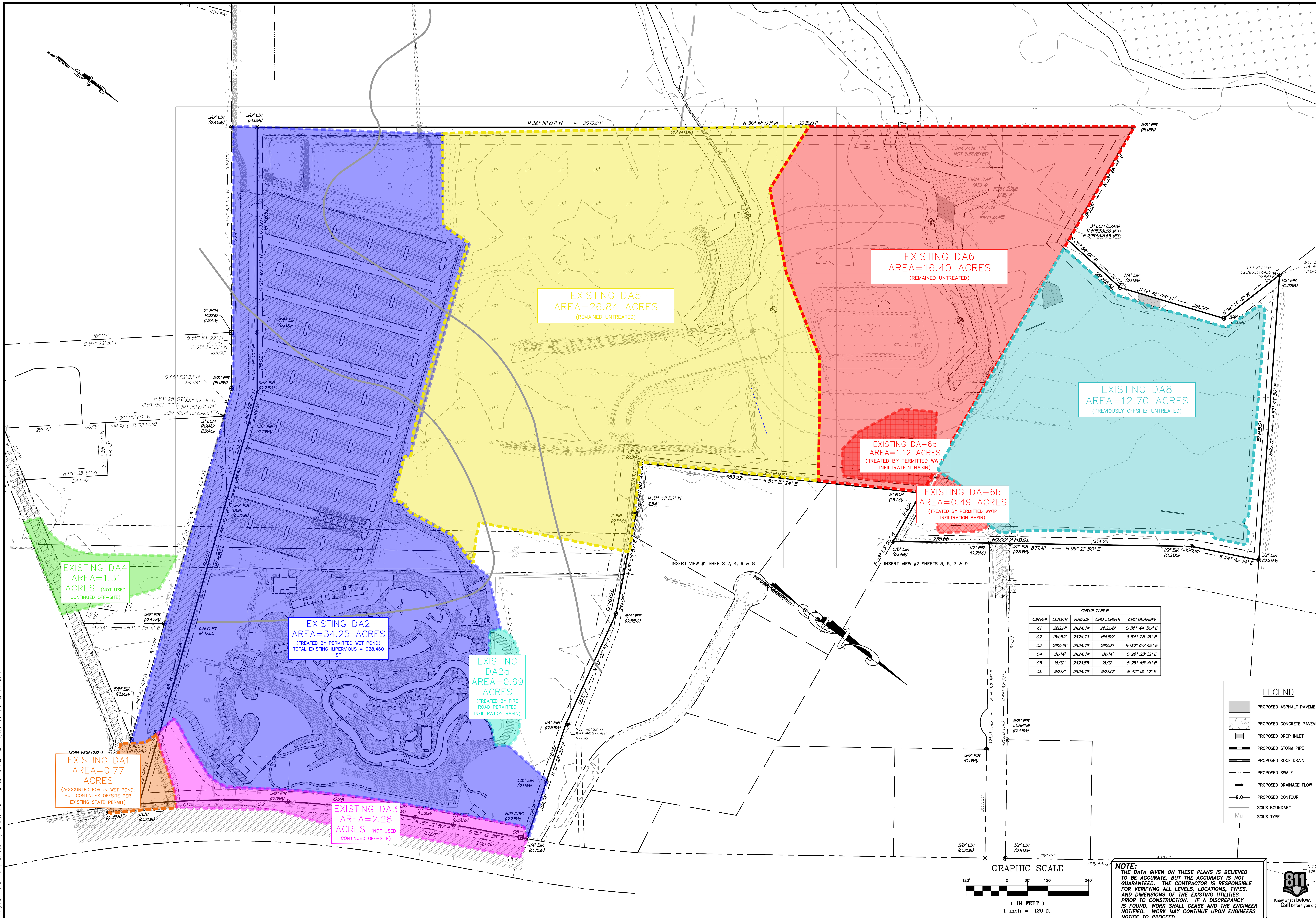
H2OBX RV & WATERPARK RESORT

H2OBX, LLC

POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

PROJECT NO.	P15004.1
DESIGNED BY	CMS
DRAWN BY	CMS/JJC
CHECKED BY	CMS
ISSUE DATE	10/23/24

SHEET NO. 1 OF 2 SHEETS



CURVE TABLE				
CURVE#	LENGTH	RADIUS	CHD LENGTH	CHD BEARING
C1	282.19'	2924.79'	282.08'	S 38° 44' 50" E
C2	154.32'	2924.79'	154.30'	S 34° 28' 18" E
C3	292.49'	2924.79'	292.37'	S 30° 05' 43" E
C4	86.14'	2924.79'	86.14'	S 26° 23' 12" E
C5	18.92'	2929.35'	18.92'	S 25° 43' 41" E
C6	80.81'	2924.79'	80.80'	S 42° 18' 10" E

LEGEND

- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- PROPOSED DROP INLET
- PROPOSED STORM PIPE
- PROPOSED ROOF DRAIN
- PROPOSED SWALE
- PROPOSED DRAINAGE FLOW
- PROPOSED CONTOUR
- SOILS BOUNDARY
- Mu SOILS TYPE

NOTE:
THE DATA GIVEN ON THESE PLANS IS BELIEVED TO BE ACCURATE, BUT THE ACCURACY IS NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL LEVELS, LOCATIONS, TYPES, AND DIMENSIONS OF THE EXISTING UTILITIES PRIOR TO CONSTRUCTION. IF A DISCREPANCY IS FOUND, WORK SHALL CEASE AND THE ENGINEER NOTIFIED. WORK MAY CONTINUE UPON ENGINEERS NOTICE TO PROCEED.

Know what's below. Call before you dig.

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SUITE B
BLACK MOUNTAIN, NC 28711
Phone: (828) 357-5149
administrator@quible.com

PRELIMINARY NOT FOR CONSTRUCTION

CERTIFICATION

REVISIONS

NO.	DATE

PREDEVELOPED DRAINAGE AREA MAP

H2OBX RV & WATERPARK RESORT
H2OBX, LLC

POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

PROJECT NO.	P15004.1
DESIGNED BY	CMS
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SHEET NO. 1 OF 2 SHEETS

ROY COOPER
Governor
MARY PENNY KELLEY
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

October 1, 2024

Ms. Cathleen Saunders, P.E.
WithersRavenel
115 MacKenan Drive
Cary, North Carolina 27511

RE: Wastewater Service
H2OBX RV Park
Powells Point - Currituck County

Dear Ms. Saunders:

H2OBX, LLC holds permit Number WQ0038695 allowing for the continued operation of the H2OBX Waterpark wastewater treatment and disposal system. The subject treatment system permit is in effect through June 30, 2029 and can be renewed and reissued. At this time, there are no significant compliance issues related to the operation of the H2OBX Waterpark wastewater facility. As such, wastewater management needs generated through the planned H2OBX RV Park project have potential to be served through the H2OBX Waterpark wastewater system based on a cursory review of available information and projected design flows.

Please note that the above position is based on a preliminary review of the H2OBX Waterpark's operational status for the wastewater system. A final determination regarding the feasibility of directing flow from the subject project to the subject receiving facility would not be made until review of a sewer extension permit application package is performed. All conditions and requirements for issuance of a sewer system extension permit must be satisfied to enable approval of such permit. No part of a sewer collection system shall be constructed without first obtaining required permits.

This letter does not commit or obligate H2OBX, LLC to provide sewer service for the subject project, nor does it obligate the Division of Water Resources to issue related sewer system permits for the project. Please note that the Division of Water Resources has not reviewed the layout and design of the RV Park itself to ensure conformity with 15A NCAC 2T set-back requirements to the high-rate infiltration system and WWTP structures and components. Please ensure the overall RV Park layout does not conflict with set-back requirements related to the facility's wastewater system and permit.

A copy of the H2OBX Waterpark's wastewater system permit is attached for reference.

Should you have any questions concerning this matter, please contact me at 252-948-3939 or at *david.may@ncdenr.gov*.

Sincerely,

David May

David May, L.G., Supervisor
Water Quality Regional Operations Section
Division of Water Resources
Washington Regional Office

Attachment: H2OBX Waterpark WWTP Permit (No. WQ0038695)

cc: H2OBX, LLC
Currituck County – Planning and Inspections Department

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

August 15, 2022

KENNETH ELLIS – MANAGING MEMBER
H2OBX, LLC
1 EAST RIDGE ROAD
LOUNDONVILLE, NEW YORK 12211

Subject: Permit No. WQ0038695
H2OBX Waterpark WWTP
High-Rate Infiltration System
Currituck County

Dear Mr. Ellis:

In accordance with your permit change of ownership request received February 3, 2022, and subsequent additional information received May 20, 2022, we are forwarding herewith Permit No. WQ0038695 dated August 15, 2022, to H2OBX, LLC for the continued operation of the subject Phase 1 wastewater treatment and high-rate infiltration facilities and the construction and operation of the subject Phase 2 high-rate infiltration facilities.

The following modifications to the subject permit are as follows: The Permittee has been changed from OBX Waterpark Adventure, LLC to H2OBX, LLC.

This permit shall be effective from the date of issuance through June 30, 2029, shall replace Permit No. WQ0038695 issued February 24, 2017, and shall be subject to the conditions and limitations therein. **The Permittee shall submit a renewal application no later than January 1, 2029.**

Please pay attention to the monitoring requirements listed Attachments A, B, and C they may differ from the previous permit issuance. Failure to establish an adequate system for collecting and maintaining the required operational information shall result in future compliance problems.

The Division has removed the following permit conditions since the last permit issuance dated February 24, 2017:

- Old Condition I.3 – This condition has been met.
- Old Condition I.4 – This condition has been met.
- Old Condition I.5 – This condition has been met.
- Old Condition I.7 – This condition is no longer required.
- Old Condition II.6 – This condition has been removed as the green area requirements have been repealed.
- Old Condition VI.2 – This condition has been removed as permits are not voidable.

The following permit conditions are new since the last permit issuance dated February 24, 2017:

- Condition I.3 – This condition requires a gauge to monitor waste levels in the groundwater lowering system effluent storage pond be installed within 60 days of the effective date of this permit.

- Condition II.6 – This condition requires that the attached Operational Agreement be a condition of this permit.

- Condition III.12 – This condition requires that the freeboard in the groundwater lowering system effluent storage pond shall not be less than two feet at any time.

- Condition III.13 – This condition requires a gauge to monitor waste levels in the groundwater lowering system effluent storage pond be provided.

- Condition III.15 – This condition requires metering equipment be tested and calibrated annually.

- Condition IV.5.d – This condition has been revised to include additional recording requirements.

- Condition IV.6 – This condition requires that the freeboard in the groundwater lowering system effluent storage pond be recorded weekly.

- Condition IV.7 – This condition has been revised to include additional reporting requirements.

- Condition IV.9.b – This condition has been revised to include the date of infiltration equipment calibration as a required entry in the maintenance log.

- Condition VI.3 – This condition states that there are no variances to administrative codes or general statutes governing the construction or operation of the facilities permitted herein.

If any parts, requirements, or limitations contained in this permit are unacceptable, the Permittee has the right to request an adjudicatory hearing upon written request within 30 days following receipt of this permit. This request shall be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings at 6714 Mail Service Center, Raleigh, NC 27699-6714. Otherwise, this permit shall be final and binding.

If you need additional information concerning this permit, please contact Lauren Raup-Plummer at (919) 707-3660 or Lauren.Plummer@ncdenr.gov.

Sincerely,

for Richard E. Rogers, Jr., Director
Division of Water Resources

cc: Currituck County Health Department (Electronic Copy)
Washington Regional Office, Water Quality Regional Operations Section (Electronic Copy)
Nadeen Dashti, E.I. – Quible & Associates, P.C. (Electronic Copy)
Laserfiche File (Electronic Copy)
Digital Permit Archive (Electronic Copy)

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NORTH CAROLINA

ENVIRONMENTAL MANAGEMENT COMMISSION

DEPARTMENT OF ENVIRONMENTAL QUALITY

RALEIGH

HIGH-RATE INFILTRATION SYSTEM PERMIT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules, and Regulations

PERMISSION IS HEREBY GRANTED TO

H2OBX, LLC

Currituck County

FOR THE

operation of a 60,000 gallon per day (GPD) wastewater treatment and high-rate infiltration facility consisting of the:

construction/expansion and operation of a 250,000 GPD high-rate infiltration system (Phase 2) consisting of: two 1.32 acre (2.64 total acres) high-rate infiltration basins, each including 54 spray irrigation heads at 30 feet on centers each with wetted diameter of 34 feet and an operating flow of 7.48 gallons per minute (GPM); flow to each of the infiltration basins controlled by a valve vault incorporating two electronically-actuated butterfly valves; and all associated piping, valves, controls, and appurtenances; the

construction/expansion and operation of a 558,756 GPD groundwater lowering system (Phase 2) consisting of: 2,267 linear feet (LF) of 10-inch HDPE CPP underdrain pipe that discharges to a groundwater lowering system effluent storage pond (also referred to as a settling/mixing basin); and all associated piping, valves, controls, and appurtenances; the

continued operation of a 60,000 GPD wastewater treatment facility (Phase 1) consisting of: a manual bar screen (3/4-inch spacing) with drying rack; a 21,524 gallon mudwell and flow equalization tank with two 165 GPM equalization/sludge return pumps; a 45,239 gallon (anoxic volume), 10,000 gallon (feed/working volume) anoxic tank with two 220 GPM main reactor feed pumps; two 10,596 gallon main Amphidrome membrane bioreactors (MBR), each with a tank surface area of 142.5 square feet (ft^2) (89 gallons per inch); two variable capacity process air blowers; a 17,358 gallon clear well with four 427.5 GPM backwash pumps and two 92 GPM secondary reactor feed pumps; a 3,808 gallon secondary reactor (MBR) with a tank surface area of 26 ft^2 (22.4 gallons per inch): a 6,000 gallon clear well with two 202 GPM dosing pumps and a 216 GPM polishing reactor backwash pump; two 4 gallon per hour (GPH) carbon feed pumps; two 1 GPH alum feed pumps; two 1 GPH alkalinity feed pumps; a 202 GPM Aqua Azul ultraviolet (UV) disinfection system; an effluent flow meter; an auxiliary generator; and all associated piping, valves, controls, and appurtenances; the

continued operation of a 60,000 GPD high-rate infiltration system (Phase 1) consisting of: a 0.57 acre high-rate infiltration basin with 27 spray irrigation heads at 30 feet on centers each with a wetted diameter of 34 feet and an operating flow of 7.48 GPM; and all associated piping, valves, controls, and appurtenances; and the

continued operation of a 327,930 GPD groundwater lowering system (Phase 1) consisting of: 1,379 LF of 10-inch HDPE CPP underdrain pipe that discharges to a groundwater lowering system effluent storage pond (also referred to as a settling/mixing basin); and all associated piping, valves, controls, and appurtenances

to serve the H2OBX Waterpark WWTP, with no discharge of wastes to surface waters, pursuant to the application received February 3, 2022, subsequent additional information received May 20, 2022, and in conformity with the Division-approved plans and specifications considered a part of this permit.

This permit shall be effective from the date of issuance through June 30, 2029, shall replace Permit No. WQ0038695 issued February 24, 2017, and shall be subject to the following conditions and limitations:

I. SCHEDULES

1. Upon completion of construction and prior to operation of Phase 2 of this permitted facility, the Permittee shall submit an engineering certification from a North Carolina licensed Professional Engineer certifying that the permitted facility has been constructed in accordance with G.S. 143-215.1, Administrative Code Title 15A Subchapter 02T, this permit, and the Division-approved plans and specifications. For phased and partially certified facilities, the Permittee shall retain the responsibility to track further construction approved under this permit, and shall provide a final engineering certification upon project completion. Mail the Engineering Certification to the Division of Water Resources, Non-Discharge Branch, 1617 Mail Service Center, Raleigh, NC 27699-1617, or Non-Discharge.Reports@ncdenr.gov. [15A NCAC 02T .0116(a)]

2. The Permittee shall notify the Washington Regional Office, telephone number (252) 946-6481, at least two business days in advance of initial operation of the constructed Phase 2 facilities so that the Division can conduct a startup inspection. [15A NCAC 02T .0108(b)(1)(B)]

3. A gauge to monitor waste levels in the groundwater lowering system effluent storage pond (i.e., settling/mixing basin) shall be installed within 60 days of the effective date of this permit. Caution shall be taken not to damage the integrity of any liner (if present) when installing a gauge. [15A NCAC 02T .0108(b)(1)(B), 02T .0705(c)]

4. The Permittee shall request renewal of this permit on Division-approved forms no later than January 1, 2029. [15A NCAC 02T .0105(b), 02T .0109]

II. PERFORMANCE STANDARDS

1. The Permittee shall maintain and operate the subject non-discharge facilities so there is no discharge to surface waters, nor any contravention of groundwater or surface water standards. In the event the facilities fail to perform satisfactorily, including the creation of nuisance conditions due to improper operation and maintenance, or failure of the infiltration areas to assimilate the effluent, the Permittee shall take immediate corrective actions, including Division required actions, such as the construction of additional or replacement wastewater treatment or disposal facilities. [15A NCAC 02T .0108(b)(1)(A)]

2. This permit shall not relieve the Permittee of their responsibility for damages to groundwater or surface water resulting from the operation of this facility. [15A NCAC 02T .0108(b)(1)(A)]

3. Groundwater monitoring wells shall be constructed in accordance with 15A NCAC 02C .0108 (Standards of Construction for Wells Other than Water Supply), and any other jurisdictional laws and regulations pertaining to well construction. [15A NCAC 02C .0108]

4. Effluent quality shall not exceed the limitations specified in Attachment A. [15A NCAC 02T .0705(b)]

5. Application rates, whether hydraulic, nutrient, or other pollutant, shall not exceed those specified in Attachment B. [15A NCAC 02T .0705(m)]

6. The attached Operational Agreement shall be a condition of this permit. Noncompliance with the terms of the Operational Agreement shall subject the Permittee to all sanctions under G.S. 143-215.6A, G.S. 143-215.6B, and G.S. 143-215.6C for violation of or failure to act in accordance with the terms and conditions of this permit. [15A NCAC 02T .0115]

7. High-rate infiltration sites permitted on or after December 30, 1983 have a compliance boundary that is either 250 feet from the infiltration area, or 50 feet within the property boundary, whichever is closest to the infiltration area. Any exceedance of groundwater standards at or beyond the compliance boundary shall require corrective action. Division-approved relocation of the compliance boundary shall be noted in Attachment B. Multiple contiguous properties under common ownership and permitted for use as a disposal system shall be treated as a single property with regard to determination of a compliance boundary. [15A NCAC 02L .0106(d)(2), 02L .0107(b), 02T .0105(h), G.S. 143-215.1(i), G.S. 143-215.1(k)]

8. The review boundary is midway between the compliance boundary and the infiltration area. Any exceedance of groundwater standards at or beyond the review boundary shall require preventative action. [15A NCAC 02L .0106(d)(1), 02L .0108]

9. The Permittee shall apply for a permit modification to establish a new compliance boundary prior to any sale or transfer of property affecting a compliance boundary (i.e., parcel subdivision). [15A NCAC 02L .0107(c)]

10. No wells, excluding Division-approved monitoring wells, shall be constructed within the compliance boundary except as provided for in 15A NCAC 02L .0107(g). [15A NCAC 02L .0107]

11. Except as provided for in 15A NCAC 02L .0107(g), the Permittee shall ensure any landowner who is not the Permittee and owns land within the compliance boundary shall execute and file with the Currituck County Register of Deeds an easement running with the land containing the following items:

    a. A notice of the permit and number or other description as allowed in 15A NCAC 02L .0107(f)(1);

    b. Prohibits construction and operation of water supply wells within the compliance boundary; and

    c. Reserves the right of the Permittee or the State to enter the property within the compliance boundary for purposes related to the permit.

    The Director may terminate the easement when its purpose has been fulfilled or is no longer needed.

    [15A NCAC 02L .0107(f)]

12. The facilities herein were permitted per the following setbacks:

a. The infiltration sites were originally permitted February 24, 2017. The setbacks for infiltration sites originally permitted or modified from September 1, 2006 to August 31, 2018 are as follows (all distances in feet):

i.	Each habitable residence or place of assembly under separate ownership:	400 [1]
ii.	Each habitable residence or place of assembly owned by the Permittee:	200
iii.	Each private or public water supply source:	100
iv.	Non-SA surface waters:	50 [3]
v.	SA surface waters	100 [3]
vi.	Groundwater lowering ditches:	50 [3]
vii.	Surface water diversions:	50
viii.	Each well with exception of monitoring wells:	100
ix.	Each property line:	200 [2]
x.	Top of slope of embankments or cuts of two feet or more in vertical height:	100
xi.	Each water line:	10
xii.	Subsurface groundwater lowering drainage systems:	50 [3]
xiii.	Each swimming pool:	100
xiv.	Public right of way:	50
xv.	Nitrification field:	20
xvi.	Each building foundation or basement:	15
xvii.	Each impounded public surface water supply:	500
xviii.	Each public shallow ground water supply (less than 50 feet deep):	500

[1] Habitable residences or places of assembly under separate ownership constructed after the facilities herein were originally permitted or subsequently modified are exempt from this setback.

[2] Setbacks to property lines are not applicable when the Permittee, or the entity from which the Permittee is leasing, owns both parcels separated by the property line.

[3] Setbacks to non-SA surface waters, groundwater lowering ditches, and subsurface groundwater lowering drainage systems have been reduced from 200 to 50 feet, and setbacks to SA surface waters have been reduced from 200 to 100 feet because the treatment units are designed to meet a Total Nitrogen of 4 mg/L and a Total Phosphorus of 2 mg/L.

[15A NCAC 02T .0706(a), 02T .0706(c), 02T .0706(f), 02T .0706(g)]

b. The storage and treatment units were originally permitted February 24, 2017. The setbacks for storage and treatment units originally permitted or modified from September 1, 2006 to August 31, 2018 are as follows (all distances in feet):

i.	Each habitable residence or place of assembly under separate ownership:	100 [1]
ii.	Each private or public water supply source:	100
iii.	Surface waters:	50
iv.	Each well with exception of monitoring wells:	100
v.	Each property line:	50 [2]

[1] Habitable residences or places of assembly under separate ownership constructed after the facilities herein were originally permitted or subsequently modified are exempt from this setback.

[2] Setbacks to property lines are not applicable when the Permittee, or the entity from which the Permittee is leasing, owns both parcels separated by the property line.

[15A NCAC 02T .0706(d), 02T .0706(f), 02T .0706(g)]

III. OPERATION AND MAINTENANCE REQUIREMENTS

1. The Permittee shall operate and maintain the subject facilities as a non-discharge system. [15A NCAC 02T .0700]

2. The Permittee shall maintain an Operation and Maintenance Plan, which shall include operational functions, maintenance schedules, safety measures, and a spill response plan. [15A NCAC 02T .0707(a)]

3. Upon the Water Pollution Control System Operators Certification Commission's (WPCSOCC) classification of the subject non-discharge facilities, the Permittee shall designate and employ a certified operator in responsible charge (ORC), and one or more certified operators as back-up ORCs. The ORC or their back-up shall operate and visit the facilities as required by the WPCSOCC. [15A NCAC 02T .0117]

4. The Permittee shall take measures to prevent effluent ponding in or runoff from the infiltration sites listed in Attachment B. [15A NCAC 02T .0707(c)]

5. Infiltration equipment shall be tested and calibrated once per permit cycle. [15A NCAC 02T .0707(d)]

6. Only treated effluent from the H2OBX Waterpark WWTP shall be infiltrated on the sites listed in Attachment B. [15A NCAC 02T .0701]

7. The Permittee shall not allow vehicles or heavy machinery on the infiltration area, except during equipment installation or maintenance activities. [15A NCAC 02T .0707(e)]

8. The Permittee shall prohibit public access to the wastewater treatment, storage, and infiltration facilities. [15A NCAC 02T .0705(p)]

9. The Permittee shall dispose or utilize generated residuals in a Division-approved manner. [15A NCAC 02T .0708, 02T .1100].

10. The Permittee shall not divert or bypass untreated or partially treated wastewater from the subject facilities. [15A NCAC 02T .0705(i)]

11. The Permittee shall provide a water-tight seal on all treatment and storage units, or provide two feet protection from the 100-year flood plain elevation. [15A NCAC 02T .0705(l)]

12. Freeboard in the groundwater lowering system effluent storage pond (i.e., settling/mixing basin) shall not be less than two feet at any time. [15A NCAC 02T .0705(c)]

13. A gauge to monitor waste levels in the groundwater lowering system effluent storage pond (i.e., settling/mixing basin) shall be provided. This gauge shall have readily visible permanent markings, at inch or tenth of a foot increments, indicating the following elevations: maximum liquid level at the top of the temporary liquid storage volume; minimum liquid level at the bottom of the temporary liquid storage volume; and the lowest point on top of the dam. [15A NCAC 02T .0707(f)]

14. A protective vegetative cover shall be established and maintained on all berms, pipe runs, erosion control areas, surface water diversions, and earthen embankments (i.e., outside toe of embankment to maximum allowable temporary storage elevation on the inside of the embankment). Trees, shrubs, and other woody vegetation shall not be allowed to grow on the earthen dikes or embankments. Earthen embankments shall be kept mowed or otherwise controlled and accessible. [15A NCAC 02T .0707(g)]

15. Metering equipment shall be tested and calibrated annually. [15A NCAC 02T .0707(d)]

16. An automatically activated standby power source capable of powering all essential treatment units shall be on site and operational at all times. If a generator is employed as an alternate power supply, it shall be tested weekly by interrupting the primary power source. [15A NCAC 02T .0705(k)]

17. The infiltration areas shall be cleaned at least once per permit cycle to remove deposited materials that may impede the infiltration process. Cleaning records shall be maintained at the facility for five years, and shall be made available to the Division upon request. The Washington Regional Office, telephone number (252) 946-6481, shall be notified prior to each cleaning. [15A NCAC 02T .0707(h)]

IV. MONITORING AND REPORTING REQUIREMENTS

1. The Permittee shall conduct and report any Division required monitoring necessary to evaluate this facility's impact on groundwater and surface water. [15A NCAC 02T .0108(c)]

2. A Division-certified laboratory shall conduct all analyses for the required effluent, groundwater, and surface water parameters. [15A NCAC 02H .0800]

3. Flow through the treatment facility shall be continuously monitored, and daily flow values shall be reported on Form NDMR. Facilities with a permitted flow less than 10,000 GPD may estimate their flow from water usage records provided the water source is metered. [15A NCAC 02T .0105(k), 02T .0108(c)]

4. The Permittee shall monitor the treated effluent at the frequencies and locations for the parameters specified in Attachment A. [15A NCAC 02T .0108(c)]

5. The Permittee shall maintain records tracking the amount of effluent infiltrated. These records shall include the following information for each infiltration site listed in Attachment B:

   a. Date of infiltration;
   b. Volume of effluent infiltrated;
   c. Site infiltrated;
   d. Length of time site is infiltrated;
   e. Loading rates to each infiltration site listed in Attachment B; and
   f. Weather conditions.

   [15A NCAC 02T .0108(c)]

6. Freeboard (i.e., waste level to the lowest embankment elevation) in the groundwater lowering system effluent storage pond (i.e., settling/mixing basin) shall be measured to the nearest inch or tenth of a foot, and recorded weekly. Weekly freeboard records shall be maintained for five years, and shall be made available to the Division upon request. [15A NCAC 02T .0108(c)]

7. Three copies of all monitoring data (as specified in Conditions IV.3. and IV.4.) on Form NDMR for each PPI and three copies of all operation and disposal records (as specified in Conditions IV.5. and IV.6.) on Form NDAR-2 for every site in Attachment B shall be submitted on or before the last day of the following month. If no activities occurred during the monitoring month, monitoring reports are still required documenting the absence of the activity. All information shall be submitted to the following address:

Division of Water Resources
Information Processing Unit
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

[15A NCAC 02T .0105(l)]

8. The Permittee shall maintain a record of all residuals removed from this facility. This record shall be maintained for five years, and shall be made available to the Division upon request. This record shall include:

   a. Name of the residuals hauler;
   b. Non-Discharge permit number authorizing the residuals disposal, or a letter from a municipality agreeing to accept the residuals;
   c. Date the residuals were hauled; and
   d. Volume of residuals removed.

   [15A NCAC 02T .0708(b)]

9. A maintenance log shall be kept at this facility. This log shall be maintained for five years, and shall be made available to the Division upon request. This log shall include:

   a. Date of flow measurement device calibration;
   b. Date of infiltration equipment calibration;
   c. Date and results of power interruption testing on alternate power supply;
   d. Visual observations of the plant and plant site; and
   e. Record of preventative maintenance (e.g., changing of equipment, adjustments, testing, inspections and cleanings, etc.).

   [15A NCAC 02T .0707(i)]

10. Monitoring wells MW-1, MW-2, MW-3, and MW-4 shall be sampled at the frequencies and for the parameters specified in Attachment C. All mapping, well construction forms, well abandonment forms and monitoring data shall refer to the permit number and the well nomenclature as provided in Attachment C and Figures 1 and 2. [15A NCAC 02T .0105(m)]

11. Two copies of the monitoring well sampling and analysis results shall be submitted on a Compliance Monitoring Form (GW-59), along with attached copies of laboratory analyses, on or before the last working day of the month following the sampling month. The Compliance Monitoring Form (GW-59) shall include this permit number, the appropriate well identification number, and one GW-59a certification form shall be submitted with each set of sampling results. All information shall be submitted to the following address:

Division of Water Resources
Information Processing Unit
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

[15A NCAC 02T .0105(m)]

12. **Noncompliance Notification:**

The Permittee shall report to the Washington Regional Office, telephone number (252) 946-6481, within 24 hours of first knowledge of the following:

a. Treatment of wastes abnormal in quantity or characteristic, including the known passage of a hazardous substance.

b. Any process unit failure (e.g., mechanical, electrical, etc.) rendering the facility incapable of adequate wastewater treatment.

c. Any facility failure resulting in a discharge to surface waters.

d. Any time self-monitoring indicates the facility has gone out of compliance with its permit limitations.

e. Ponding in or runoff from the infiltration sites.

Emergencies requiring reporting outside normal business hours shall call the Division's Emergency Response personnel at telephone number (800) 662-7956, (800) 858-0368, or (919) 733-3300. All noncompliance notifications shall file a written report to the Washington Regional Office within five days of first knowledge of the occurrence, and this report shall outline the actions proposed or taken to ensure the problem does not recur. [15A NCAC 02T .0108(b)(1)(A)]

V. INSPECTIONS

1. The Permittee shall perform inspections and maintenance to ensure proper operation of the wastewater treatment and infiltration facilities. [15A NCAC 02T .0707(j)]

2. The Permittee shall inspect the wastewater treatment and infiltration facilities to prevent malfunctions, facility deterioration, and operator errors that may result in discharges of wastes to the environment, threats to human health, or public nuisances. The Permittee shall maintain an inspection log that includes the date and time of inspection, observations made, and maintenance, repairs, or corrective actions taken. The Permittee shall maintain this inspection log for a period of five years from the date of the inspection, and this log shall be made available to the Division upon request. [15A NCAC 02T .0707(i), 02T .0707(j)]

3. Division authorized representatives may, upon presentation of credentials, enter and inspect any property, premises, or place related to the wastewater treatment and infiltration facilities permitted herein at any reasonable time for determining compliance with this permit. Division authorized representatives may inspect or copy records maintained under the terms and conditions of this permit, and may collect groundwater, surface water, or leachate samples. [G.S. 143-215.3(a)(2)]

VI. GENERAL CONDITIONS

1. Failure to comply with the conditions and limitations contained herein may subject the Permittee to a Division enforcement action. [G.S. 143-215.6A, 143-215.6B, 143-215.6C]

2. This permit is effective only with respect to the nature and volume of wastes described in the permit application, and Division-approved plans and specifications. [G.S. 143-215.1(d)]

3. Unless specifically requested and approved in this permit, there are no variances to administrative codes or general statutes governing the construction or operation of the facilities permitted herein. [15A NCAC 02T .0105(n)]

4. The issuance of this permit does not exempt the Permittee from complying with all statutes, rules, regulations, or ordinances that other jurisdictional government agencies (e.g., local, state, and federal) may require. [15A NCAC 02T .0105(c)(6)]

5. If the permitted facilities change ownership, or the Permittee changes their name, the Permittee shall submit a permit modification request on Division-approved forms. The Permittee shall comply with all terms and conditions of this permit until the permit is transferred to the successor-owner. [G.S. 143-215.1(d3)]

6. The Permittee shall retain a set of Division-approved plans and specifications for the life of the facilities permitted herein. [15A NCAC 02T .0105(o)]

7. The Permittee shall maintain this permit until the proper closure of all facilities permitted herein, or until the facilities permitted herein are permitted by another authority. [15A NCAC 02T .0105(j)]

8. This permit is subject to revocation or modification upon 60-day notice from the Division Director, in whole or part for:
   a. violation of any terms or conditions of this permit or Administrative Code Title 15A Subchapter 02T;
   b. obtaining a permit by misrepresentation or failure to disclose all relevant facts;
   c. the Permittee's refusal to allow authorized Department employees upon presentation of credentials:
      i. to enter the Permittee's premises where a system is located or where any records are required to be kept;
      ii. to have access to any permit required documents and records;
      iii. to inspect any monitoring equipment or method as required in this permit; or
      iv. to sample any pollutants;
   d. the Permittee's failure to pay the annual fee for administering and compliance monitoring; or
   e. a Division determination that the conditions of this permit are in conflict with North Carolina Administrative Code or General Statutes.

   [15A NCAC 02T .0110]

9. Unless the Division Director grants a variance, expansion of the facilities permitted herein shall not occur if any of the following apply:

   a. The Permittee or any parent, subsidiary, or other affiliate of the Permittee has been convicted of environmental crimes under G.S. 143-215.6B, or under Federal law that would otherwise be prosecuted under G.S. 143-215.6B, and all appeals of this conviction have been abandoned or exhausted.

   b. The Permittee or any parent, subsidiary, or other affiliate of the Permittee has previously abandoned a wastewater treatment facility without properly closing the facility.

   c. The Permittee or any parent, subsidiary, or other affiliate of the Permittee has not paid a civil penalty, and all appeals of this penalty have been abandoned or exhausted.

   d. The Permittee or any parent, subsidiary, or other affiliate of the Permittee is currently not compliant with any compliance schedule in a permit, settlement agreement, or order.

   e. The Permittee or any parent, subsidiary, or other affiliate of the Permittee has not paid an annual fee.

   [15A NCAC 02T .0120(b), 02T .0120(d)]

10. This permit shall not be renewed if the Permittee or any affiliation has not paid the required annual fee. [15A NCAC 02T .0120(c)]

Permit issued this the 15th day of August 2022

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Nathaniel D. Stamey

for Richard E. Rogers, Jr., Director
Division of Water Resources
By Authority of the Environmental Management Commission

Permit Number WQ0038695

ENGINEERING CERTIFICATION

☐ Partial ☐ Final

I, _____, as a duly licensed North Carolina Professional Engineer, having ☐ periodically / ☐ fully observed the construction of the permitted facilities, do hereby state to the best of my abilities that the facility was constructed in compliance with G.S. 143-215.1, Administrative Code Title 15A Subchapter 02T, this permit, and the Division-approved plans and specifications.

Documentation of any variation to this permit, and the Division-approved plans and specifications, is in the attached as-built drawings.

Description of variations: _____

_____

_____

_____

_____

_____

Professional Engineer's Name			
Firm Name		Firm No.	
Address			
City	State	Zip Code	
Telephone	Email		Seal, Signature, and Date

THE COMPLETED ENGINEERING CERTIFICATION, INCLUDING ALL SUPPORTING DOCUMENTATION, SHALL BE SENT TO THE FOLLOWING ADDRESS:

NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF WATER RESOURCES
NON-DISCHARGE BRANCH

By U.S. Postal Service
1617 MAIL SERVICE CENTER
RALEIGH, NORTH CAROLINA 27699-1617

By Courier/Special Delivery
512 N. SALISBURY ST.
RALEIGH, NORTH CAROLINA 27604

PPI 001 – WWTP Effluent (Phase 1)

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PCS Code	Parameter Description	Units of Measure	Monthly Average	Monthly Geometric Mean	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
00310	BOD, 5-Day (20 °C)	mg/L	10				2 x Month	Composite
00940	Chloride (as Cl)	mg/L					3 x Year [1]	Composite
50060	Chlorine, Total Residual	mg/L					5 x Week	Grab
31616	Coliform, Fecal MF, M-FC Broth, 44.5 °C	#/100 mL		14			2 x Month	Grab
50050	Flow, in Conduit or thru Treatment Plant	GPD	60,000				Continuous	Recorder
00610	Nitrogen, Ammonia Total (as N)	mg/L	4				2 x Month	Composite
00625	Nitrogen, Kjeldahl, Total (as N)	mg/L					2 x Month	Composite
00620	Nitrogen, Nitrate Total (as N)	mg/L	10				2 x Month	Composite
00600	Nitrogen, Total (as N)	mg/L	4				2 x Month	Composite
00400	pH	su					5 x Week	Grab
00665	Phosphorus, Total (as P)	mg/L	2				2 x Month	Composite
70300	Solids, Total Dissolved – 180 °C	mg/L					3 x Year [1]	Composite
00530	Solids, Total Suspended	mg/L	15				2 x Month	Composite

1. 3 x Year sampling shall be conducted in February, June, and October.

PPI 002 – Groundwater Lowering System Effluent (Phase 1)

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PCS Code	Parameter Description	Units of Measure	Monthly Average	Monthly Geometric Mean	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
00310	BOD, 5-Day (20 °C)	mg/L					3 x Year [1]	Grab
00940	Chloride (as Cl)	mg/L	250				3 x Year [1]	Grab
50060	Chlorine, Total Residual	mg/L					2 x Month	Grab
50050	Flow, in Conduit or thru Treatment Plant	GPD				327,930	Continuous	Recorder
00610	Nitrogen, Ammonia Total (as N)	mg/L	1.5				2 x Month	Grab
00620	Nitrogen, Nitrate Total (as N)	mg/L	10				2 x Month	Grab
00600	Nitrogen, Total (as N)	mg/L					2 x Month	Grab
00400	pH	su			6.5	8.5	2 x Month	Grab
00665	Phosphorus, Total (as P)	mg/L					2 x Month	Grab
70300	Solids, Total Dissolved – 180 °C	mg/L	500				3 x Year [1]	Grab

1. 3 x Year sampling shall be conducted in February, June, and October.

PPI 003 – Groundwater Lowering System Effluent (Phase 2)

EFFLUENT CHARACTERISTICS		EFFLUENT LIMITS					MONITORING REQUIREMENTS	
PCS Code	Parameter Description	Units of Measure	Monthly Average	Monthly Geometric Mean	Daily Minimum	Daily Maximum	Measurement Frequency	Sample Type
00310	BOD, 5-Day (20 °C)	mg/L					3 x Year [1]	Grab
00940	Chloride (as Cl)	mg/L	250				3 x Year [1]	Grab
50060	Chlorine, Total Residual	mg/L					2 x Month	Grab
50050	Flow, in Conduit or thru Treatment Plant	GPD				558,756	Continuous	Recorder
00610	Nitrogen, Ammonia Total (as N)	mg/L	1.5				2 x Month	Grab
00620	Nitrogen, Nitrate Total (as N)	mg/L	10				2 x Month	Grab
00600	Nitrogen, Total (as N)	mg/L					2 x Month	Grab
00400	pH	su			6.5	8.5	2 x Month	Grab
00665	Phosphorus, Total (as P)	mg/L					2 x Month	Grab
70300	Solids, Total Dissolved – 180 °C	mg/L	500				3 x Year [1]	Grab

1. 3 x Year sampling shall be conducted in February, June, and October.

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H2OBX, LLC – H2OBX Waterpark WWTP (Phase 1)

INFILTRATION AREA INFORMATION							APPLICATION LIMITATIONS		
Site	Owner	County	Latitude	Longitude	Net Acreage	Dominant Soil Series	Parameter	Rate	Units
A	H2OBX, LLC	Currituck	36.113219°	-75.833566°	0.57	Ds – Dragston	01284 – Non-Discharge Application Rate	2.55	GPD/ft^2
Totals					**0.57**				

H2OBX, LLC – H2OBX Waterpark WWTP (Phase 2)

INFILTRATION AREA INFORMATION							APPLICATION LIMITATIONS		
Site	Owner	County	Latitude	Longitude	Net Acreage	Dominant Soil Series	Parameter	Rate	Units
A	H2OBX, LLC	Currituck	36.113219°	-75.833566°	1.32	Ds – Dragston	01284 – Non-Discharge Application Rate	2.55	GPD/ft^2
B	H2OBX, LLC	Currituck	36.112611°	-75.834190°	1.32	Ds – Dragston	01284 – Non-Discharge Application Rate	2.55	GPD/ft^2
Totals					**2.64**				

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ATTACHMENT C – GROUNDWATER MONITORING AND LIMITATIONS

Permit Number: WQ0038695 **Version: 1.1**

Monitoring Wells: MW-1, MW-2, MW-3, and MW-4

GROUNDWATER CHARACTERISTICS		GROUNDWATER STANDARDS		MONITORING REQUIREMENTS		
PCS Code	Parameter Description	Daily Maximum		Frequency Measurement	Sample Type	Footnotes
00680	Carbon, Tot Organic (TOC)		mg/L	3 x Year	Grab	1, 6
00940	Chloride (as Cl)	250	mg/L	3 x Year	Grab	1
31616	Coliform, Fecal MF, M-FC Broth, 44.5 °C		#/100 mL	3 x Year	Grab	1
00610	Nitrogen, Ammonia Total (as N)	1.5	mg/L	3 x Year	Grab	1
00620	Nitrogen, Nitrate Total (as N)	10	mg/L	3 x Year	Grab	1
00400	pH	6.5-8.5	su	3 x Year	Grab	1, 2
00665	Phosphorus, Total (as P)		mg/L	3 x Year	Grab	1
70300	Solids, Total Dissolved - 180 °C	500	mg/L	3 x Year	Grab	1
GWVOC	Volatile Compounds (GW)		Present: Yes/No	Annually	Grab	1, 4, 5
82546	Water Level, Distance from measuring point		feet	3 x Year	Calculated	1, 2, 3

1. 3 x Year monitoring shall be conducted in February, June, and October; Annual monitoring shall be conducted in October.
2. The measurement of water levels shall be made prior to purging the wells. The depth to water in each well shall be measured from the surveyed point on the top of the casing. The measurement of pH shall be made after purging and prior to sampling for the remaining parameters.
3. The measuring points (top of well casing) of all monitoring wells shall be surveyed to provide the relative elevation of the measuring point for each monitoring well. The measuring points (top of casing) of all monitoring wells shall be surveyed relative to a common datum.
4. Volatile Organic Compounds (VOC) - In October only, analyze by one of the following methods:
   a. Standard Method 6230D, PQL at 0.5 µg/L or less
   b. Standard Method 6210D, PQL at 0.5 µg/L or less
   c. EPA Method 8021, Low Concentration, PQL at 0.5 µg/L or less
   d. EPA Method 8260, Low Concentration, PQL at 0.5 µg/L or less
   e. Another method with prior approval by the Water Quality Permitting Section Chief

   Any method used shall meet the following qualifications:
   a. A laboratory shall be DWR certified to run any method used.
   b. The method used shall include all the constituents listed in Table VIII of Standard Method 6230D.
   c. The method used shall provide a PQL of 0.5 µg/L or less that shall be supported by laboratory proficiency studies as required by the DWR Laboratory Certification Unit. Any constituents detected above the MDL but below the PQL of 0.5 µg/L shall be qualified (estimated) and reported.
5. If any volatile organic compounds (VOC) are detected as a result of monitoring as provided in Attachment C, then the Washington Regional Office supervisor, telephone number (252) 946-6481, shall be contacted immediately for further instructions regarding any additional follow-up analyses required.
6. If TOC concentrations greater than 10 mg/L are detected in any downgradient monitoring well, additional sampling and analysis shall be conducted to identify the individual constituents comprising this TOC concentration. If the TOC concentration as measured in the background monitor well exceeds 10 mg/L, this concentration will be taken to represent the naturally occurring TOC concentration. Any exceedances of this naturally occurring TOC concentration in the downgradient wells shall be subject to the additional sampling and analysis as described above.
7. Monitoring wells shall be reported consistent with the nomenclature and location information provided in Figures 1 and 2 and this attachment.

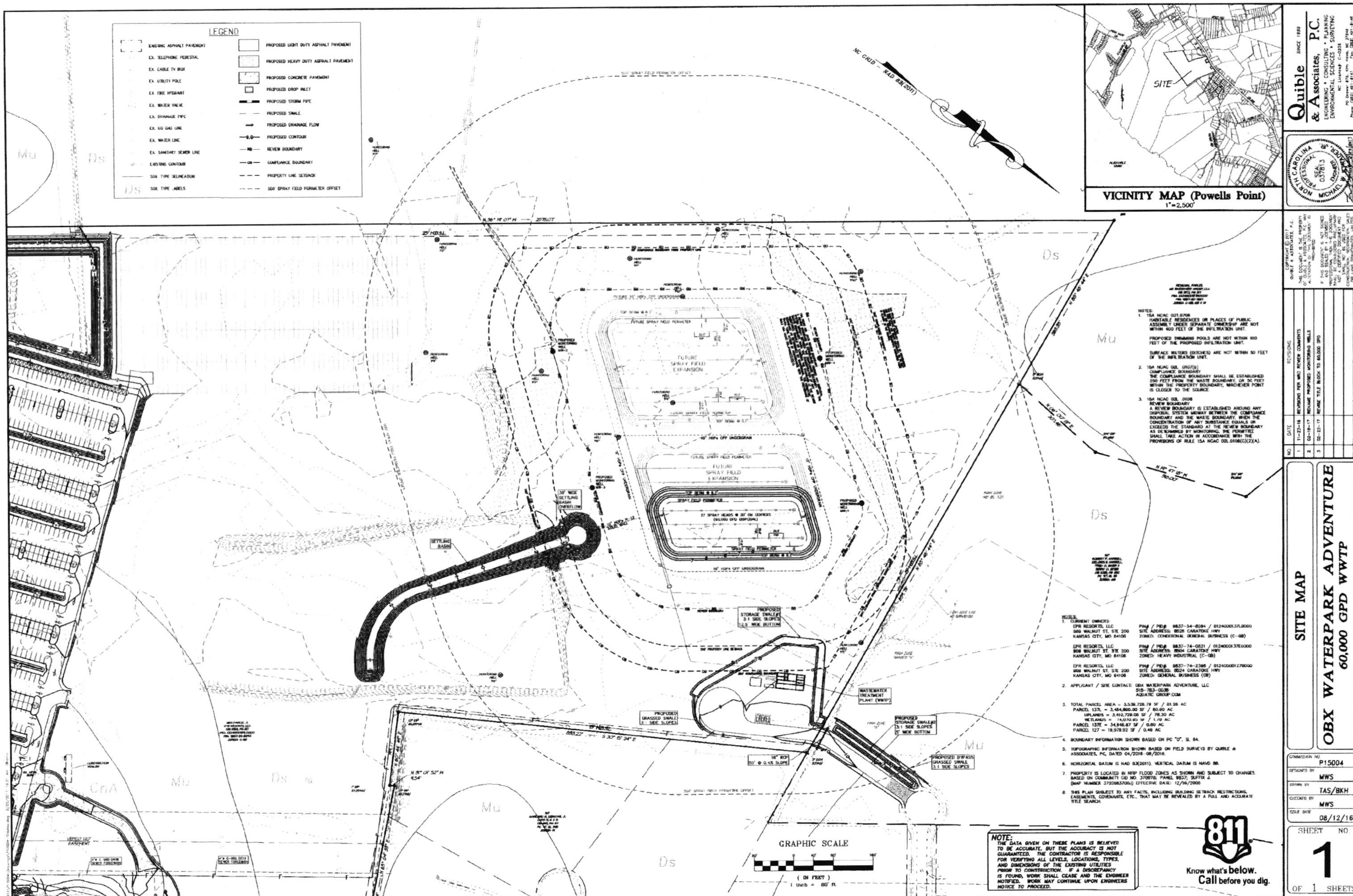
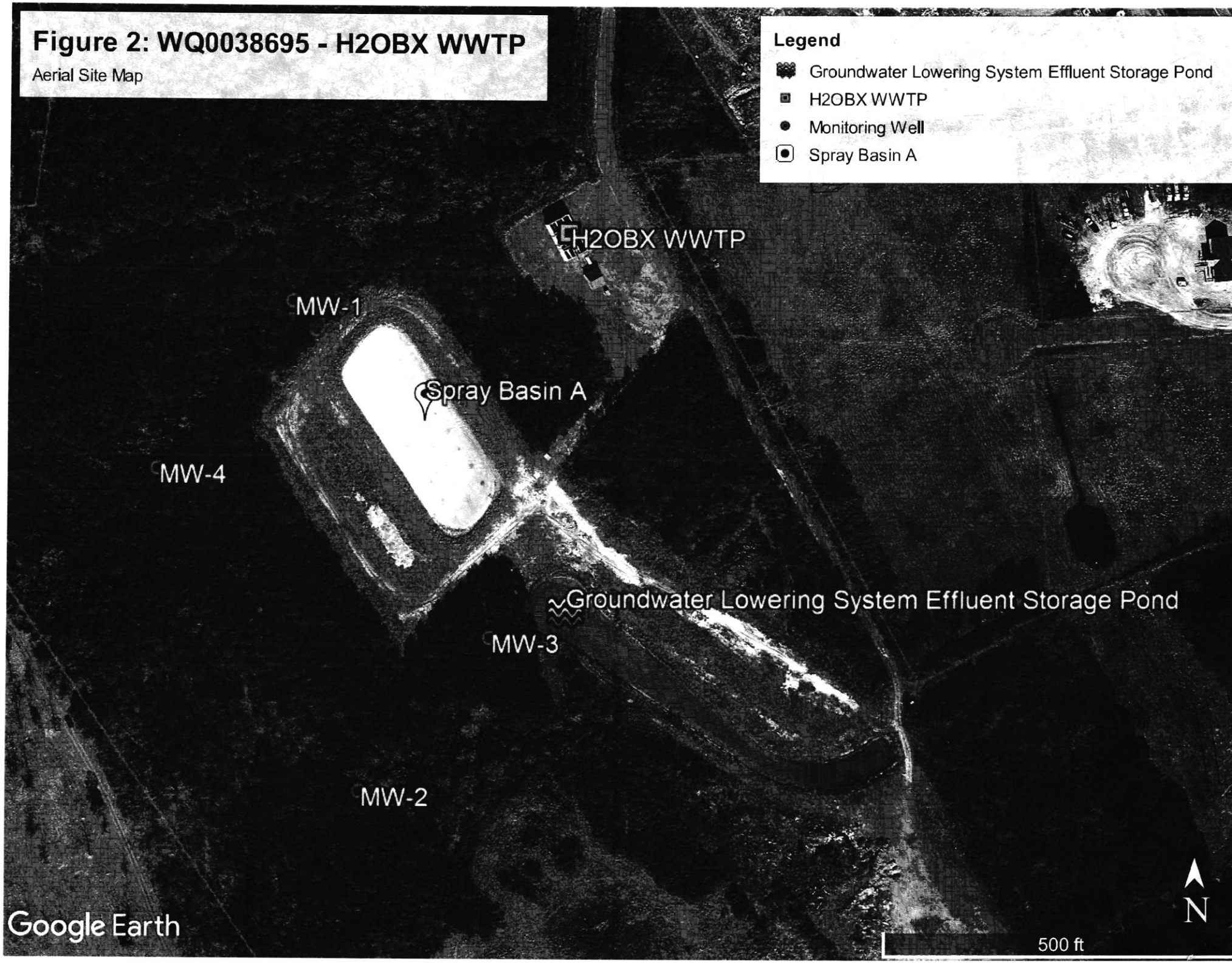

LEGEND
EXISTING ASPHALT PAVEMENT
EX. TELEPHONE PEDESTAL
EX. CABLE TV BOX
EX. UTILITY POLE
EX. FIRE HYDRANT
EX. WATER VALVE
EX. DRAINAGE PIPE
EX. UG GAS LINE
EX. WATER LINE
EX. SANITARY SEWER LINE
EXISTING CONTOUR
SOIL TYPE DELINEATION
SOIL TYPE LABELS
PROPOSED LIGHT DUTY ASPHALT PAVEMENT
PROPOSED HEAVY DUTY ASPHALT PAVEMENT
PROPOSED CONCRETE PAVEMENT
PROPOSED DROP INLET
PROPOSED STORM PIPE
PROPOSED SWALE
PROPOSED DRAINAGE FLOW
PROPOSED CONTOUR
REVIEW BOUNDARY
COMPLIANCE BOUNDARY
PROPERTY LINE SETBACK
500' SPRAY FIELD PERIMETER OFFSET
NC GRID – NAD 83(2011)
VICINITY MAP (Powells Point)
1"=2,500'
SITE
FUTURE SPRAY FIELD EXPANSION
27 SPRAY HEADS @ 30' ON CENTERS
SETTLING BASIN
PROPOSED STORAGE SWALE 3:1 SIDE SLOPES
WASTEWATER TREATMENT PLANT (WWTP)
PROPOSED GRASSED SWALE 3:1 SIDE SLOPES
PROPOSED BYPASS GRASSED SWALE 3:1 SIDE SLOPES
NOTES:
1. 15A NCAC 02T.0706
HABITABLE RESIDENCES OR PLACES OF PUBLIC ASSEMBLY UNDER SEPARATE OWNERSHIP ARE NOT WITHIN 400 FEET OF THE INFILTRATION UNIT.
PROPOSED SWIMMING POOLS ARE NOT WITHIN 100 FEET OF THE PROPOSED INFILTRATION UNIT.
SURFACE WATERS (DITCHES) ARE NOT WITHIN 50 FEET OF THE INFILTRATION UNIT.
2. 15A NCAC 02L .0107(b)
COMPLIANCE BOUNDARY
THE COMPLIANCE BOUNDARY SHALL BE ESTABLISHED 250 FEET FROM THE WASTE BOUNDARY, OR 50 FEET WITHIN THE PROPERTY BOUNDARY, WHICHEVER POINT IS CLOSER TO THE SOURCE.
3. 15A NCAC 02L .0108
REVIEW BOUNDARY
A REVIEW BOUNDARY IS ESTABLISHED AROUND ANY DISPOSAL SYSTEM MIDWAY BETWEEN THE COMPLIANCE BOUNDARY AND THE WASTE BOUNDARY. WHEN THE CONCENTRATION OF ANY SUBSTANCE EQUALS OR EXCEEDS THE STANDARD AT THE REVIEW BOUNDARY AS DETERMINED BY MONITORING, THE PERMITTEE SHALL TAKE ACTION IN ACCORDANCE WITH THE PROVISIONS OF RULE 15A NCAC 02L.0108(C)(2)(A).
NOTES:
1. CURRENT OWNERS:
EPR RESORTS, LLC 909 WALNUT ST, STE 200 KANSAS CITY, MO 64106 PIN# / PID#: 9837-54-8094 / 0124000137L0000 SITE ADDRESS: 8526 CARATOKE HWY ZONED: CONDITIONAL GENERAL BUSINESS (C-GB)
EPR RESORTS, LLC 909 WALNUT ST, STE 200 KANSAS CITY, MO 64106 PIN# / PID#: 9837-74-0821 / 0124000137E0000 SITE ADDRESS: 8504 CARATOKE HWY ZONED: HEAVY INDUSTRIAL (C-GB)
EPR RESORTS, LLC 909 WALNUT ST, STE 200 KANSAS CITY, MO 64106 PIN# / PID#: 9837-74-2398 / 012400001270000 SITE ADDRESS: 8524 CARATOKE HWY ZONED: GENERAL BUSINESS (GB)
2. APPLICANT / SITE CONTACT: OBX WATERPARK ADVENTURE, LLC 518-783-0038 AQUATIC GROUP.COM
3. TOTAL PARCEL AREA = 3,539,726.79 SF / 81.26 AC
PARCEL 137L = 3,484,800.00 SF / 80.00 AC
UPLANDS = 3,410,729.05 SF / 78.30 AC
WETLANDS = 74,070.95 SF / 1.70 AC
PARCEL 137E = 34,946.87 SF / 0.80 AC
PARCEL 127 = 19,979.92 SF / 0.46 AC
4. BOUNDARY INFORMATION SHOWN BASED ON PC "O", SL 84.
5. TOPOGRAPHIC INFORMATION SHOWN BASED ON FIELD SURVEYS BY QUIBLE & ASSOCIATES, PC, DATED 04/2016-08/2016.
6. HORIZONTAL DATUM IS NAD 83(2011). VERTICAL DATUM IS NAVD 88.
7. PROPERTY IS LOCATED IN NFIP FLOOD ZONES AS SHOWN AND SUBJECT TO CHANGES BASED ON COMMUNITY CID NO. 370078; PANEL 9837; SUFFIX J. (MAP NUMBER 3720983700J) EFFECTIVE DATE: 12/16/2005
8. THIS PLAN SUBJECT TO ANY FACTS, INCLUDING BUILDING SETBACK RESTRICTIONS, EASEMENTS, COVENANTS, ETC., THAT MAY BE REVEALED BY A FULL AND ACCURATE TITLE SEARCH.
NOTE:
THE DATA GIVEN ON THESE PLANS IS BELIEVED TO BE ACCURATE, BUT THE ACCURACY IS NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL LEVELS, LOCATIONS, TYPES, AND DIMENSIONS OF THE EXISTING UTILITIES PRIOR TO CONSTRUCTION. IF A DISCREPANCY IS FOUND, WORK SHALL CEASE AND THE ENGINEER NOTIFIED. WORK MAY CONTINUE UPON ENGINEERS NOTICE TO PROCEED.
811
Know what's below. Call before you dig.
GRAPHIC SCALE
(IN FEET)
1 inch = 80 ft.
Quible & Associates, P.C. SINCE 1959
ENGINEERING • CONSULTING • PLANNING ENVIRONMENTAL SCIENCES • SURVEYING
NORTH CAROLINA PROFESSIONAL SEAL 037813 ENGINEER MICHAEL W. STRADER
CERTIFICATION
COPYRIGHT © 2017 QUIBLE & ASSOCIATES, P.C.
THIS DOCUMENT IS THE PROPERTY OF QUIBLE & ASSOCIATES, P.C. ANY ALTERATION OF THIS DOCUMENT IS PROHIBITED
IF THIS DOCUMENT IS NOT SIGNED AND SEALED BY A LICENSED PROFESSIONAL, THEN THE DOCUMENT SHALL BE CONSIDERED PRELIMINARY, NOT A CERTIFIED DOCUMENT AND SHALL NOT BE USED FOR CONSTRUCTION, RECORDATION, SALES OR LAND CONVEYANCES, UNLESS OTHERWISE NOTED.
NO. DATE REVISIONS
1 11-23-16 REVISIONS PER WIRO REVIEW COMMENTS
2 02-16-17 RENAME PROPOSED MONITORING WELLS
3 02-22-17 REVISE TITLE BLOCK TO 60,000 GPD
SITE MAP
OBX WATERPARK ADVENTURE
60,000 GPD WWTP
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA
COMMISSION NO. P15004
DESIGNED BY MWS
DRAWN BY TAS/BKH
CHECKED BY MWS
ISSUE DATE 08/12/16
SHEET NO. 1 OF 1 SHEETS

Figure 2: WQ0038695 - H2OBX WWTP

Aerial Site Map

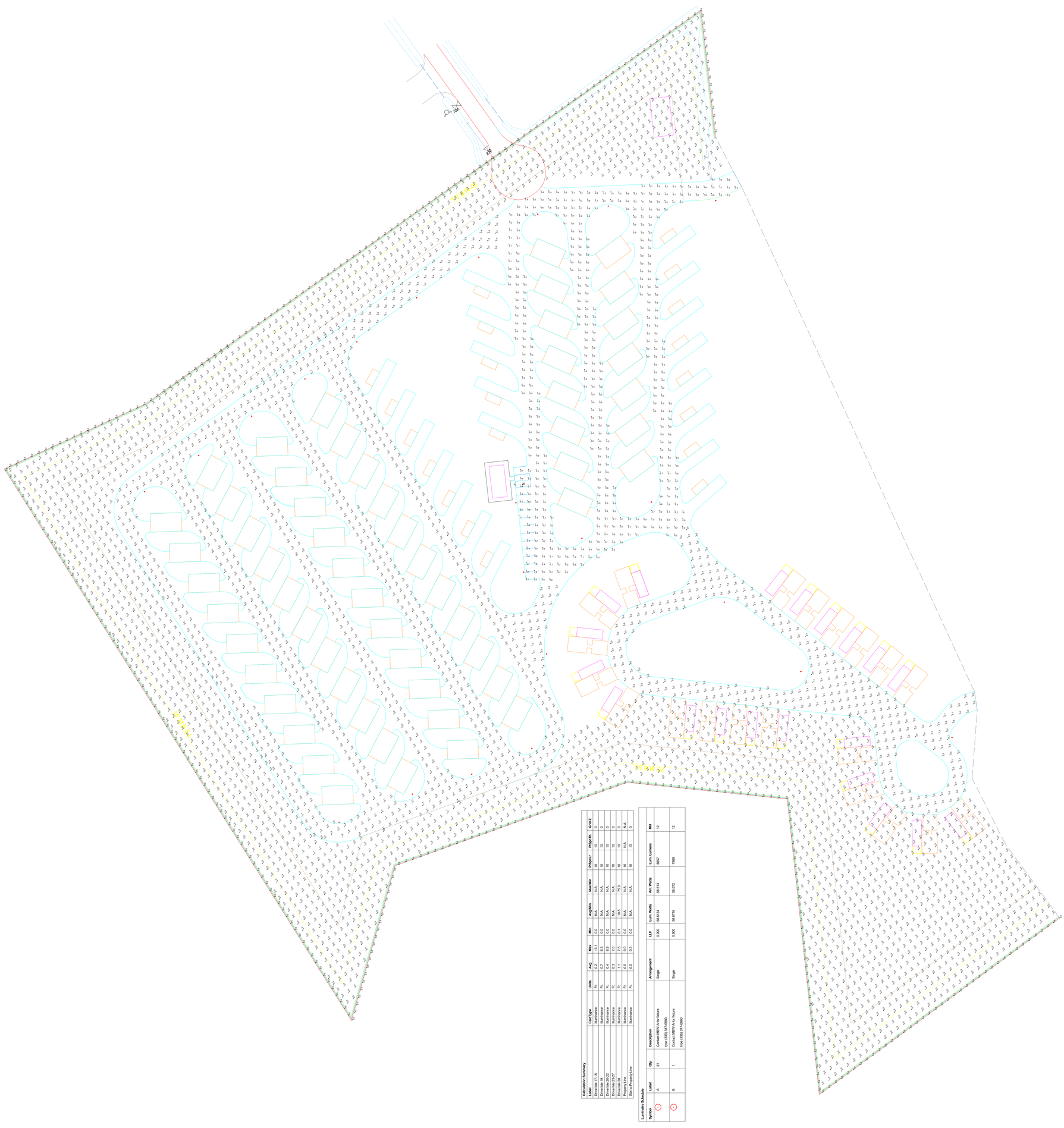


H2OBX RV Park

MB Widemann & Associates
Representatives for architectural, commercial, residential lighting & lighting controls.
www.mbw-a.com

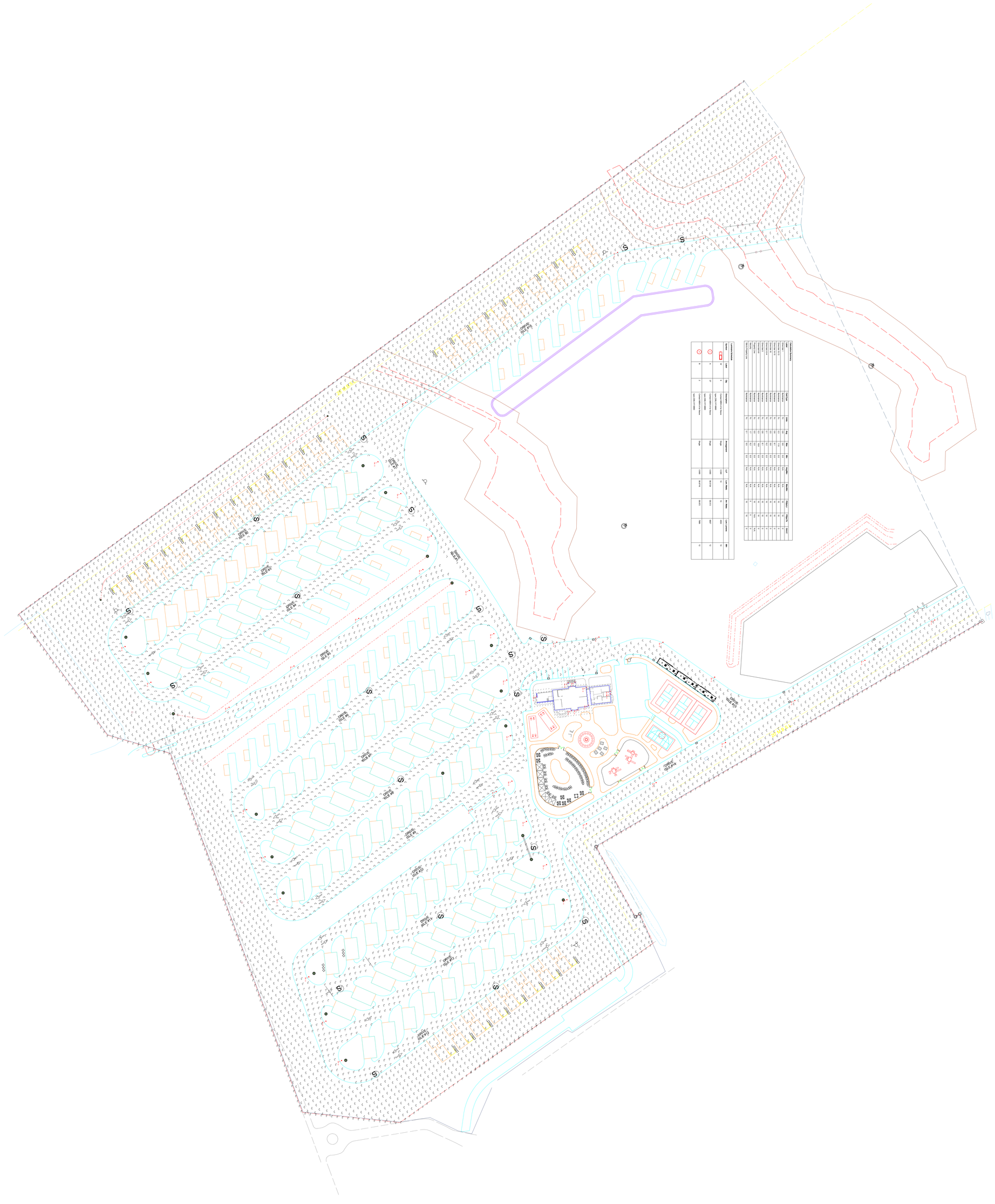
Revisions			
Rev #	Date	Comments:	
rev A	09/25/24		

DISCLAIMER: --- CALCULATED VALUES:
Calculations have been performed according to IESNA & CIE standards and good practice.
Some differences between measured values and calculated results may occur due to changes in the provided information and tolerances in the calculation methods, testing procedures, component performance, measuring techniques and field conditions such as voltage and temperature variations.
Input data used to generate the attached calculations such as room dimensions, reflectance, furniture and architectural elements significantly affect the lighting calculations.
If the real environment conditions do not match the input data furnished provided, such as differences in luminaire locations, area geometry including elevation differences, reflective properties of surrounding surfaces, obstructions or lighting from other sources than listed in layouts, differences will occur between measured values and calculated values.



Calculation Summary											
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	PtSpcLr	PtSpcTb	Grid Z	
Dove Isle 17-18	Illuminance	Fc	0.7	8.3	0.0	N.A.	N.A.	10	10	0	
Dove Isle 19	Illuminance	Fc	0.7	8.3	0.0	N.A.	N.A.	10	10	0	
Dove Isle 20-22	Illuminance	Fc	0.4	8.9	0.0	N.A.	N.A.	10	10	0	
Dove Isle 23-27	Illuminance	Fc	0.3	7.5	0.0	N.A.	N.A.	10	10	0	
Dove Isle 28	Illuminance	Fc	1.1	7.5	0.1	10.5	75.0	10	10	0	
Property Line	Illuminance	Fc	0.0	0.6	0.0	N.A.	N.A.	10	N.A.	N.A.	
Isle 1=1 Property Line	Illuminance	Fc	0.0	0.5	0.0	N.A.	N.A.	10	10	0	

Luminaire Schedule								
Symbol	Label	Qty	Description	Arrangement	LLF	Lum. Watts	Arr. Watts	Lum. Lumens	MH
	A	21	Contact MBW-A for fixture type (309) 317-6960	Single	0.900	58.5104	58.513	6827	12
	B	1	Contact MBW-A for fixture type (309) 317-6960	Single	0.900	58.8716	58.872	7989	12



Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	PtSpcLr	PtSpcTb	Grid Z
Drive Isle 1	Illuminance	Fc	0.8	9.6	0.0	N.A.	N.A.	10	10	0
Drive Isle 10-13	Illuminance	Fc	0.3	11.6	0.0	N.A.	N.A.	10	10	0
Drive Isle 14-15	Illuminance	Fc	0.6	8.1	0.0	N.A.	N.A.	10	10	0
Drive Isle 16	Illuminance	Fc	0.5	9.6	0.0	N.A.	N.A.	10	10	0
Drive Isle 2-3-4	Illuminance	Fc	0.1	6.2	0.0	N.A.	N.A.	10	10	0
Drive Isle 5	Illuminance	Fc	0.6	8.1	0.0	N.A.	N.A.	10	10	0
Drive Isle 6-8	Illuminance	Fc	0.3	16.8	0.0	N.A.	N.A.	10	10	0
Property Line	Illuminance	Fc	0.0	0.0	0.0	N.A.	N.A.	10	N.A.	N.A.
Security	Illuminance	Fc	1.7	8.2	0.0	N.A.	N.A.	5	5	0
Site to Property Line	Illuminance	Fc	0.1	9.5	0.0	N.A.	N.A.	10	10	0

Luminaire Schedule

Symbol	Label	Qty	Description	Arrangement	LLF	Lum. Watts	Arr. Watts	Lum. Lumens	MH
▭	W	9	Contact MBW-A for fixture type (336) 317-6860	Single	0.300	10	10	4553	10
○	A	37	Contact MBW-A for fixture type (336) 317-6860	Single	0.900	58.5134	58.513	6657	12
○	B	2	Contact MBW-A for fixture type (336) 317-6860	Single	0.900	58.6716	58.672	7989	12

DISCLAIMER: ---- CALCULATED VALUES:

Calculations have been performed according to IESNA & CIE standards and good practice. Some differences between measured values and calculated results may occur due to changes in the provided information and tolerances in the calculation methods, testing procedures, component performance, measuring techniques and field conditions such as voltage and temperature variations.
Input data used to generate the attached calculations such as room dimensions, reflectance, furniture and architectural elements significantly affect the lighting calculations.
If the real environment conditions do not match the input data furnished provided, such as differences in luminaire locations, area geometry including elevation differences, reflective properties of surrounding surfaces, obstructions or lighting from other sources than listed in layouts, differences will occur between measured values and calculated values.

Rev #	Date	Comments:
rev A	10/13/24	

Revisions

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H2OBX RV Park

TO: Warren Eadus, P.G.
Director of Environmental Services
West Region

FROM: Kenneth Ellis
Owner
H2OBX LLC

DATE: September 25, 2024

RE: H2OBX RV PARK OPERATIONAL PLAN

The following plan addresses the minimum requirements of Currituck County UDO 4.2.4 J(3)(h) "Operational Plan". This plan may be adjusted as required by the owner or operator and with coordination and approval by Currituck County.

At all times the H2OBX RV Park will operate as follows:

1. RV Park Operational Season
    a. The RV Park will be open February 5 – January 5.

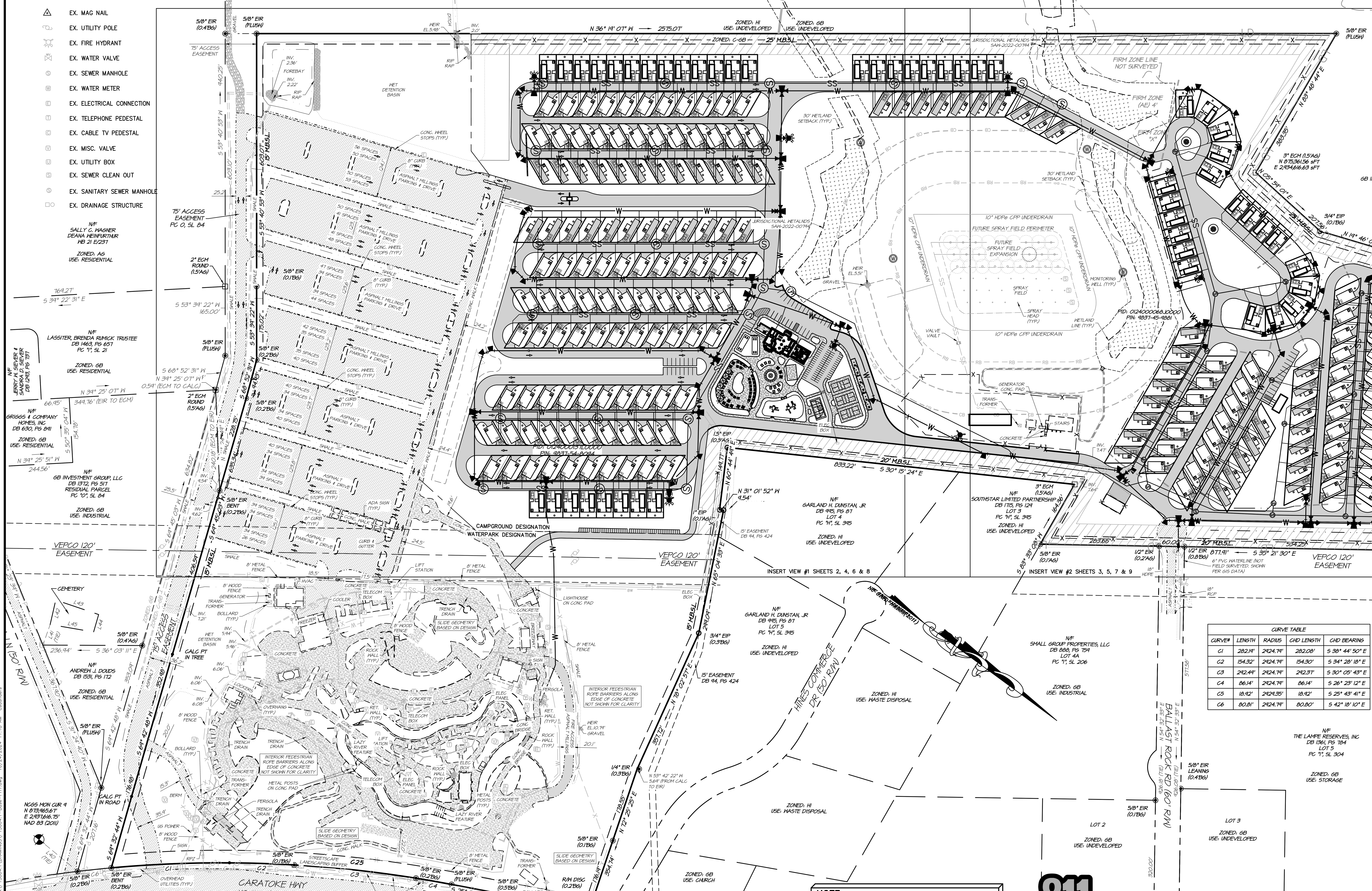
2. RV Park Closure(s)
    a. The RV Park will be closed annually from January 6 - February 4. Additional closure times may occur at the owners' discretion.

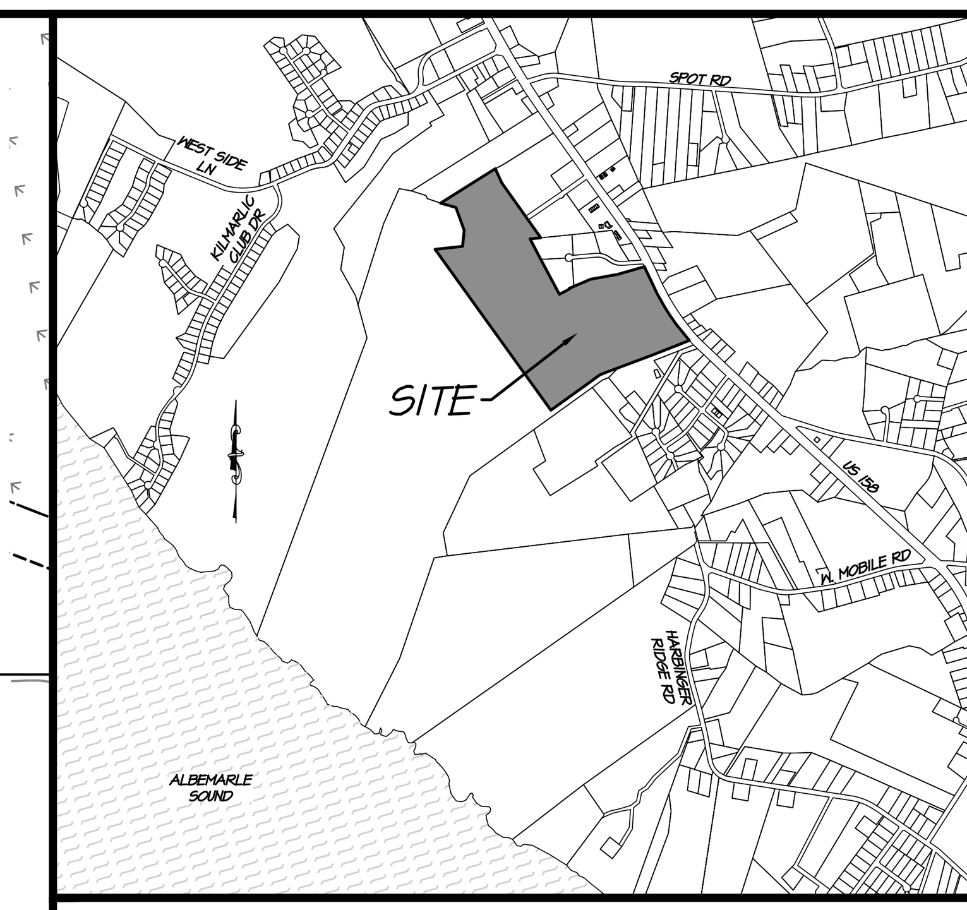
3. Employees and related persons residing at the RV Park during Seasonal Operation
    a. No more than 15 employees (not related persons) may reside at the RV Park during Seasonal Operation.

4. Employees and related persons residing at the RV Park during RV Park Closure
    a. No employees may reside at the RV Park during RV Park Closure.

As stated above, this is a preliminary operating guideline. As we move closer to opening, if more information or details are needed, we would be happy to provide.

SHEET INDEX





VICINITY MAP (Powells Point)
1"=2,500'

CURVE TABLE				
CURVE#	LENGTH	RADIUS	CHD LENGTH	CHD BEARING
C1	282.19'	2924.79'	282.08'	S 38° 44' 50" E
C2	154.32'	2924.79'	154.30'	S 34° 28' 18" E
C3	292.49'	2924.79'	292.37'	S 30° 05' 43" E
C4	86.14'	2924.79'	86.14'	S 26° 23' 12" E
C5	18.92'	2929.35'	18.92'	S 25° 43' 41" E
C6	80.81'	2924.79'	80.80'	S 42° 18' 10" E

NOTES:

1. CURRENT OWNERS: H2OBX LLC
13 GREEN MOUNTAIN DR
COHOES, NY 12047
2. TOTAL PARCEL AREA = 4,215,494.77 SF / 96.77 AC (AREAS BY COORDINATE METHOD.)
3. SUBJECT REFERENCES: DB 1512, PG 459 PC "O", SL 84; PC K, SL 55
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16. A STATE HIGH DENSITY STORMWATER PERMIT IS REQUIRED IN ADVANCE OF ANY ONSITE DISTURBANCE. RECEIVING STREAM: ALBEMARLE SOUND (30)(SB)
17. THIS PLAN SET TO BE UTILIZED FOR THE INSTALLATION OF SITE LAYOUT IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO, GRADING & DRAINAGE, INSTALLATION OF SEDIMENT CONTROL MEASURES, WATER SYSTEM AND WASTEWATER CONNECTION. FOR BUILDING DESIGN AND ASSOCIATED PLUMBING, SEE APPROPRIATE SEPARATE PLANS.

GRAPHIC SCALE
120' 0 60' 120' 240'
(IN FEET)
1 inch = 120 ft.

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CERTIFICATION

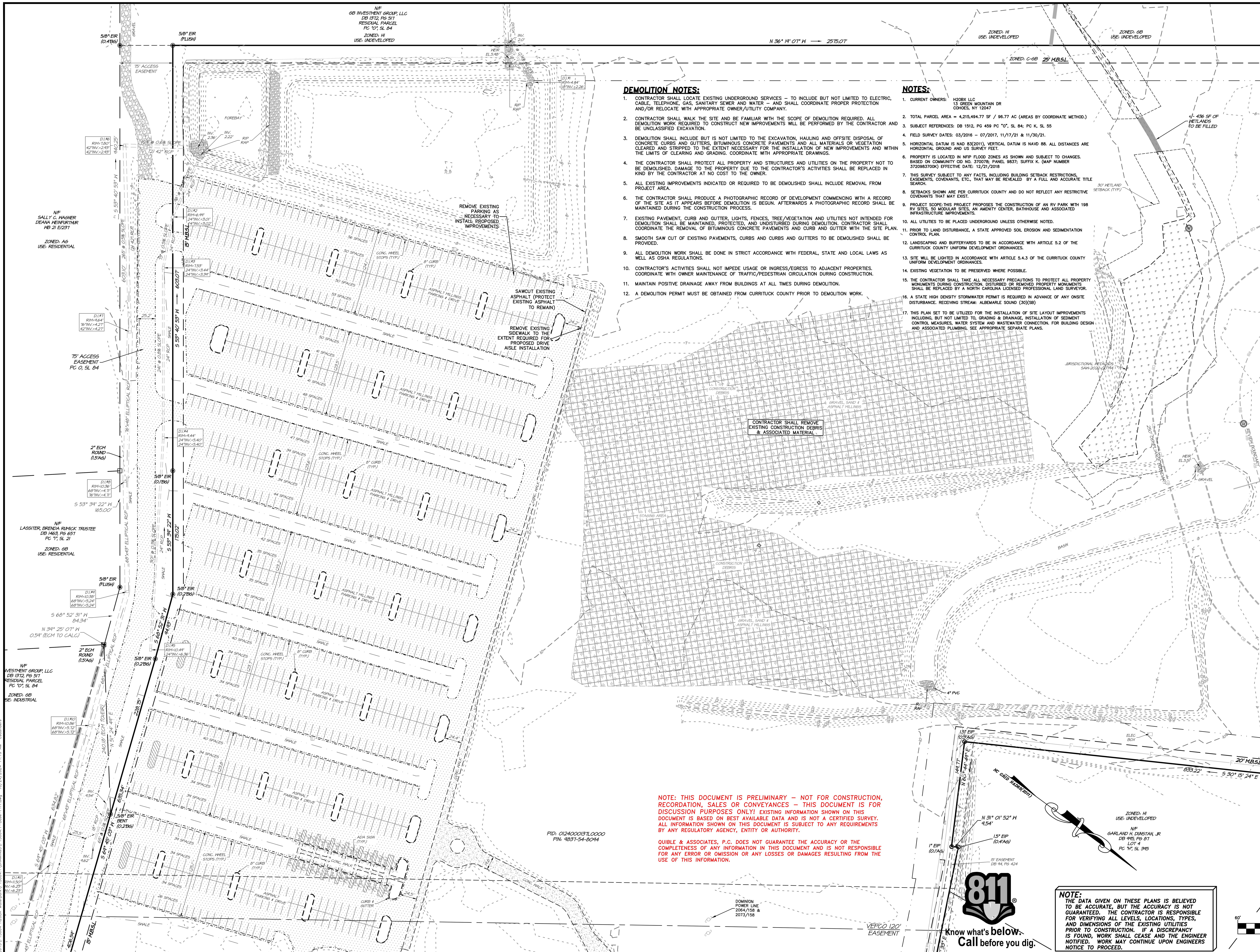
REVISIONS | DATE

COVER SHEET

H2OBX RV & WATERPARK RESORT
H2OBX, LLC
POPLAR BRANCH TOWNSHIP | CURRITUCK COUNTY | NORTH CAROLINA

PROJECT NO.	P15004.1
DESIGNED BY	CMS
DRAWN BY	CMS/JJC
CHECKED BY	MWS
ISSUE DATE	10/24/24

SHEET NO. 1 OF 16 SHEETS



DEMOLITION NOTES:

1. CONTRACTOR SHALL LOCATE EXISTING UNDERGROUND SERVICES – TO INCLUDE BUT NOT LIMITED TO ELECTRIC, CABLE, TELEPHONE, GAS, SANITARY SEWER AND WATER – AND SHALL COORDINATE PROPER PROTECTION AND/OR RELOCATE WITH APPROPRIATE OWNER/UTILITY COMPANY.
2. CONTRACTOR SHALL WALK THE SITE AND BE FAMILIAR WITH THE SCOPE OF DEMOLITION REQUIRED. ALL DEMOLITION WORK REQUIRED TO CONSTRUCT NEW IMPROVEMENTS WILL BE PERFORMED BY THE CONTRACTOR AND BE UNCLASSIFIED EXCAVATION.
3. DEMOLITION SHALL INCLUDE BUT IS NOT LIMITED TO THE EXCAVATION, HAULING AND OFFSITE DISPOSAL OF CONCRETE CURBS AND GUTTERS, BITUMINOUS CONCRETE PAVEMENTS AND ALL MATERIALS OR VEGETATION CLEARED AND STRIPPED TO THE EXTENT NECESSARY FOR THE INSTALLATION OF NEW IMPROVEMENTS AND WITHIN THE LIMITS OF CLEARING AND GRADING. COORDINATE WITH APPROPRIATE DRAWINGS.
4. THE CONTRACTOR SHALL PROTECT ALL PROPERTY AND STRUCTURES AND UTILITIES ON THE PROPERTY NOT TO BE DEMOLISHED. DAMAGE TO THE PROPERTY DUE TO THE CONTRACTOR'S ACTIVITIES SHALL BE REPLACED IN KIND BY THE CONTRACTOR AT NO COST TO THE OWNER.
5. ALL EXISTING IMPROVEMENTS INDICATED OR REQUIRED TO BE DEMOLISHED SHALL INCLUDE REMOVAL FROM PROJECT AREA.
6. THE CONTRACTOR SHALL PRODUCE A PHOTOGRAPHIC RECORD OF DEVELOPMENT COMMENCING WITH A RECORD OF THE SITE AS IT APPEARS BEFORE DEMOLITION IS BEGUN. AFTERWARDS A PHOTOGRAPHIC RECORD SHALL BE MAINTAINED DURING THE CONSTRUCTION PROCESS.
7. EXISTING PAVEMENT, CURB AND GUTTER, LIGHTS, FENCES, TREE/VEGETATION AND UTILITIES NOT INTENDED FOR DEMOLITION SHALL BE MAINTAINED, PROTECTED, AND UNDISTURBED DURING DEMOLITION. CONTRACTOR SHALL COORDINATE THE REMOVAL OF BITUMINOUS CONCRETE PAVEMENTS AND CURB AND GUTTER WITH THE SITE PLAN.
8. SMOOTH SAW CUT OF EXISTING PAVEMENTS, CURBS AND CURBS AND GUTTERS TO BE DEMOLISHED SHALL BE PROVIDED.
9. ALL DEMOLITION WORK SHALL BE DONE IN STRICT ACCORDANCE WITH FEDERAL, STATE AND LOCAL LAWS AS WELL AS OSHA REGULATIONS.
10. CONTRACTOR'S ACTIVITIES SHALL NOT IMPEDE USAGE OR INGRESS/EGRESS TO ADJACENT PROPERTIES. COORDINATE WITH OWNER MAINTENANCE OF TRAFFIC/PEDESTRIAN CIRCULATION DURING CONSTRUCTION.
11. MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS AT ALL TIMES DURING DEMOLITION.
12. A DEMOLITION PERMIT MUST BE OBTAINED FROM CURRITUCK COUNTY PRIOR TO DEMOLITION WORK.

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GRAPHIC SCALE
(IN FEET)
1 inch = 60 ft.

LEGEND

- EXISTING ASPHALT PAVEMENT
- EXISTING CONCRETE
- PROPOSED DEMOLITION
- PROPOSED WETLAND FILL
- EX. IRON ROD
- EX. DRILL HOLE
- EX. MAG NAIL
- EX. UTILITY POLE
- EX. FIRE HYDRANT
- EX. WATER VALVE
- EX. SEWER MANHOLE
- EX. WATER METER
- EX. ELECTRICAL CONNECTION
- EX. EXTERIOR LIGHT
- EX. LIGHT POLE
- EXISTING CONTOUR
- EXISTING SPOT GRADE

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NO.	DATE	REVISIONS

EXISTING CONDITIONS/DEMOLITION PLAN

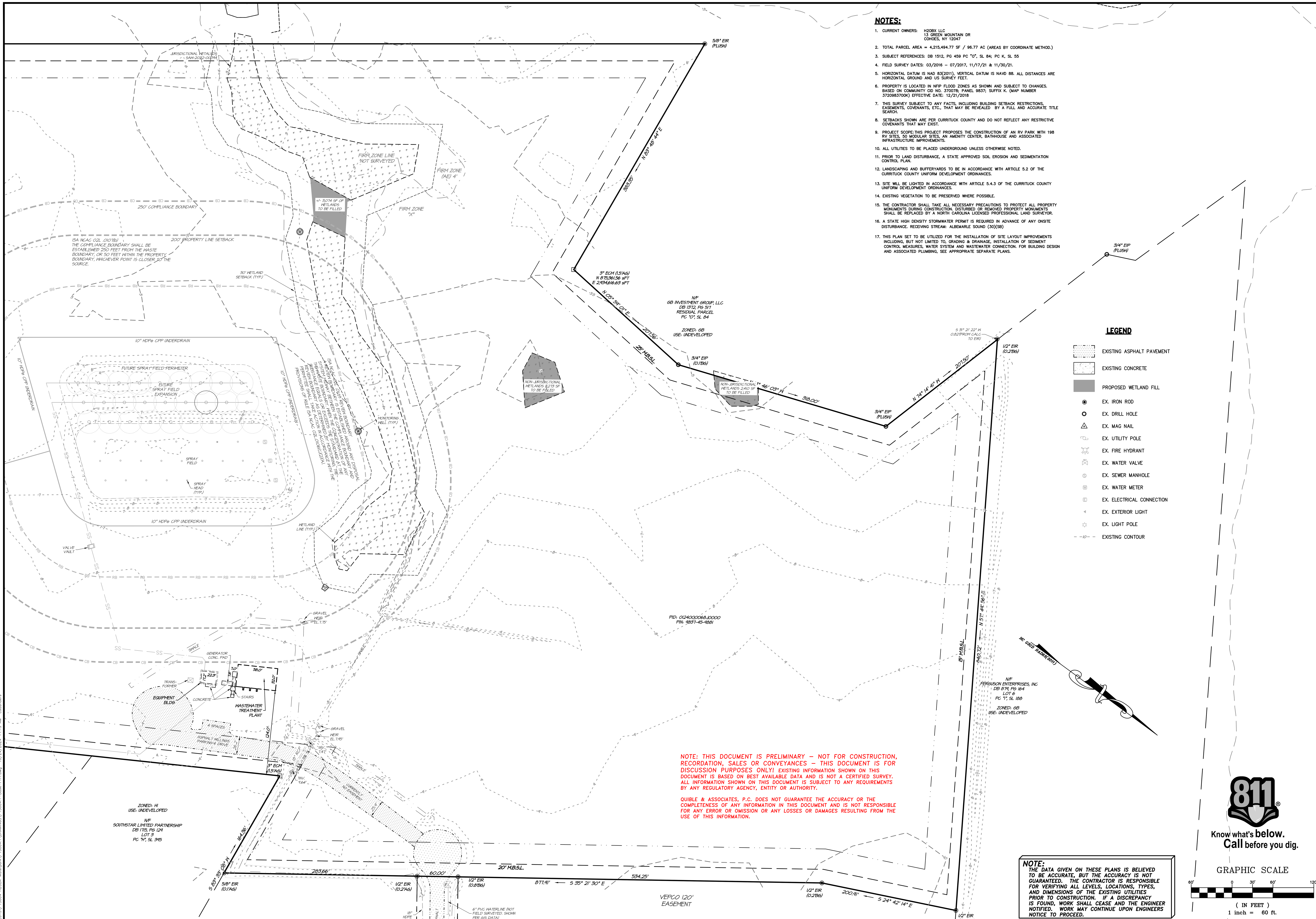
H2OBX RV & WATERPARK RESORT

H2OBX, LLC

POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

PROJECT NO.	P15004.1
DESIGNED BY	CMS
DRAWN BY	CMS/JJC
CHECKED BY	MWS
ISSUE DATE	10/24/24

SHEET NO. 2 OF 16 SHEETS



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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043652 CATHLEEN M. SAUNDERS
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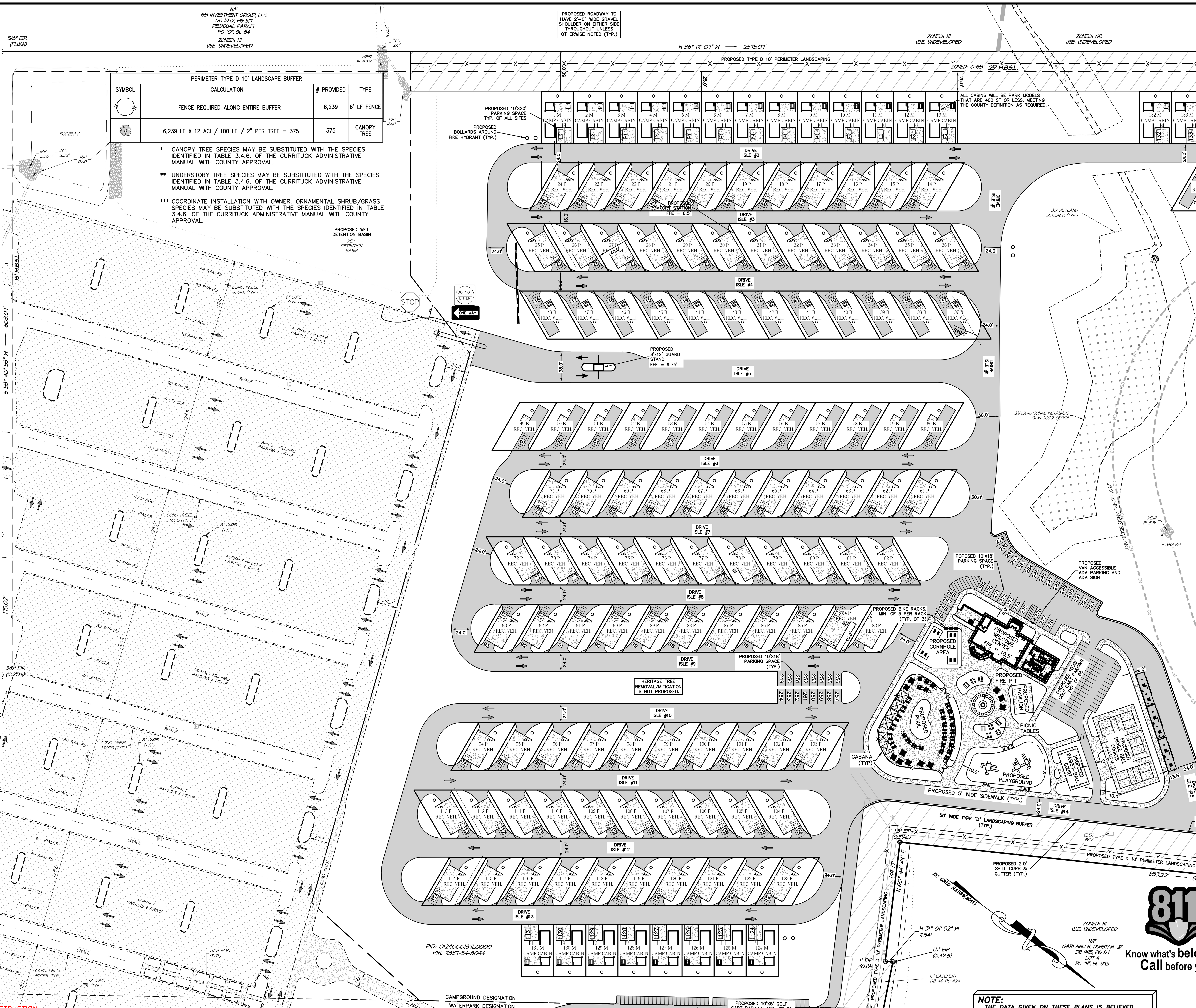
18. LOT COVERAGE (CAMPGROUND AREA ONLY +/– 2,610,700 SF)
    PROPOSED ASPHALT........591,605 SF
    PROPOSED CONCRETE........228,287 SF
    PROPOSED BUILDINGS........34,316 SF
    PROPOSED POOL........1,002 SF
    TOTAL PROPOSED COVERAGE........856,210 SF (33%)
    MAXIMUM ALLOWED........1,696,955 SF (65%)
19. PARKING CALCULATIONS:
    WATERPARK REQUIRED PARKING BASED ON ALTERNATIVE PARKING PLAN........1,053 SPACES
    EXISTING WATERPARK PARKING........1,138 SPACES
    PROPOSED PARKING TO BE REMOVED........8 SPACES
    TOTAL PARKING SPACES........1,130 SPACES

    REQUIRED PARKING FOR RV PARK = 1 SPACE PER CAMPSITE + 1 SPACE PER 10 CAMP SITES = 248 SITES X 1 SPACES/SITE + 248 SITES/10 SITE/SPACE = 273 REQUIRED

    REQUIRED PARKING FOR CLUB OR LODGE = 1 SPACE PER 300 SF = 4262 SF/300 SF = 15 SPACES REQUIRED

    TOTAL NUMBER OF SPACES REQUIRED = 288 SPACES
    TOTAL NUMBER OF SPACES PROVIDED = 307 SPACES
20. CAMPSITE TYPE BREAKDOWN:
    RECREATIONAL VEHICLE........198
    TENT........0
    CAMPING CABINS........50
    ALTERNATIVE CAMPING UNITS........0
    TOTAL # OF SITES........248
    % CAMPING CABINS & ALTERNATIVE CABINS........20.0%
21. MAXIMUM NUMBER OF SEASONAL CAMPSITES = 50 SITES (20%)
22. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
23. REMOVE TREES, GRASSES, SHRUBS AND OTHER VEGETATION, IMPROVEMENTS OR OBSTRUCTIONS INTERFERING WITH INSTALLATION OF NEW CONSTRUCTION UNLESS NOTED OTHERWISE.
24. THE ENTIRE SITE WILL BE IN FULL COMPLIANCE WITH ALL APPLICABLE NFPA REGULATIONS PERTAINING TO FIRE PROTECTION INCLUDING BUT NOT LIMITED TO NFPA 30 AS WELL AS VOLUME V OF THE NC STATE BUILDING CODE.
25. BUILDING CONSTRUCTION SHALL COMPLY WITH ALL ASPECTS OF THE NORTH CAROLINA BUILDING AND FIRE CODE.
26. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE DRAWINGS, APPLICABLE CURRITUCK COUNTY CODES AND ORDINANCES, AND NCDEQ REGULATIONS. FILL IS NOT ALLOWED WITHIN 10' OF THE PROPERTY LINE.
27. THE LOCATION, DIMENSIONS, AND ELEVATION OF EXISTING STRUCTURES, PIPING, AND UTILITIES SHOWN ARE BASED ON THE BEST AVAILABLE DATA AND ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DATA IN THE FIELD PRIOR TO CONSTRUCTION TO HIS/HER OWN SATISFACTION. THE CONTRACTOR SHALL PERFORM ANY TEST PIT WORK OR PROVIDE LOCATION SERVICES AS REQUIRED TO AVOID CONFLICTS WITH EXISTING UTILITIES. CONTACT NORTH CAROLINA ONE–CALL AT TELEPHONE NO. 1–800–632–4949, 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION TO HAVE UTILITIES MARKED.
28. THE CONTRACTOR SHALL PROVIDE SMOOTH TRANSITIONS FROM PROPOSED FEATURES TO EXISTING FEATURES AS NECESSARY.
29. THE CONTRACTOR SHALL SEAL THE EDGE OF EXISTING ASPHALT PAVEMENT WITH TACK COAT IN ACCORDANCE WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS WHERE NEW PAVEMENT JOINS EXISTING PAVEMENT. ALL WORK WITHIN NCDOT R/W SHALL BE CONSTRUCTED IN ACCORDANCE WITH NCDOT STANDARDS AND SPECIFICATIONS.
30. ALL PAVEMENT JOINTS SHALL BE SAW–CUT PRIOR TO PAVING TO PROVIDE A DURABLE AND UNIFORM JOINT.
31. ALL PAVEMENT MARKINGS, TEXT AND DIRECTIONAL ARROWS SHALL BE PAINTED WHITE. ALL LETTERING SHALL BE 2ft. IN HEIGHT. LINES SHALL BE 4" WIDE. CROSSWALK AND LOADING AREAS, SET 4" WHITE LINES ON A 45° ANGLE.
32. PROOF ROLL ALL NEW PAVED AREAS. NOTIFY OWNER AND ENGINEER OF ANY UNACCEPTABLE AREAS.
33. WATER IS PROVIDED VIA CURRITUCK COUNTY WATER SYSTEM. ALL WATER IMPROVEMENTS SHALL BE IN ACCORDANCE WITH CURRITUCK COUNTY STANDARD WATER SPECIFICATIONS AND DETAILS.
34. SEWER IS PROVIDED VIA ONSITE WASTEWATER TREATMENT PLANT (WWTP).



PERIMETER TYPE D 10' LANDSCAPE BUFFER			
SYMBOL	CALCULATION	# PROVIDED	TYPE
	FENCE REQUIRED ALONG ENTIRE BUFFER	6,239	6' LF FENCE
	6,239 LF X 12 ACI / 100 LF / 2" PER TREE = 375	375	CANOPY TREE

* CANOPY TREE SPECIES MAY BE SUBSTITUTED WITH THE SPECIES IDENTIFIED IN TABLE 3.4.6. OF THE CURRITUCK ADMINISTRATIVE MANUAL WITH COUNTY APPROVAL.

** UNDERSTORY TREE SPECIES MAY BE SUBSTITUTED WITH THE SPECIES IDENTIFIED IN TABLE 3.4.6. OF THE CURRITUCK ADMINISTRATIVE MANUAL WITH COUNTY APPROVAL.

*** COORDINATE INSTALLATION WITH OWNER. ORNAMENTAL SHRUB/GRASS SPECIES MAY BE SUBSTITUTED WITH THE SPECIES IDENTIFIED IN TABLE 3.4.6. OF THE CURRITUCK ADMINISTRATIVE MANUAL WITH COUNTY APPROVAL.

VEHICULAR LANDSCAPING			
SYMBOL	CALCULATION	# PROVIDED	TYPE
	270 LF PARKING X 1 SHRUB / 5 LF PARKING = 54 SHRUBS	54	SHRUB
	NO PARKING SPACE MAY BE MORE THAN 60' FROM CANOPY TREE	96	CANOPY TREE

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Know what's below. Call before you dig.

GRAPHIC SCALE
(IN FEET)
1 inch = 60 ft.

LEGEND

- EXISTING ASPHALT PAVEMENT
- PROPOSED GRAVEL/RIP RAP
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- EX. IRON ROD
- EX. DRILL HOLE
- EX. MAG NAIL
- EX. UTILITY POLE
- EX. FIRE HYDRANT
- EX. WATER VALVE
- EX. SEWER MANHOLE
- EX. WATER METER
- EX. ELECTRICAL CONNECTION
- EX. EXTERIOR LIGHT
- EX. LIGHT POLE
- PROPOSED 6" CURB (NO GUTTER)
- PROPOSED CURB AND GUTTER
- PROPOSED 1.5' CONCRETE RIBBON
- PROPOSED SPILL CURB AND GUTTER
- PROPOSED STORM PIPE
- W — PROPOSED WATERLINE
- SS — PROPOSED SANITARY SEWER
- P — PROPOSED PULL THROUGH SITE
- B — PROPOSED BACK IN SITE
- M — PROPOSED MODULAR SITE

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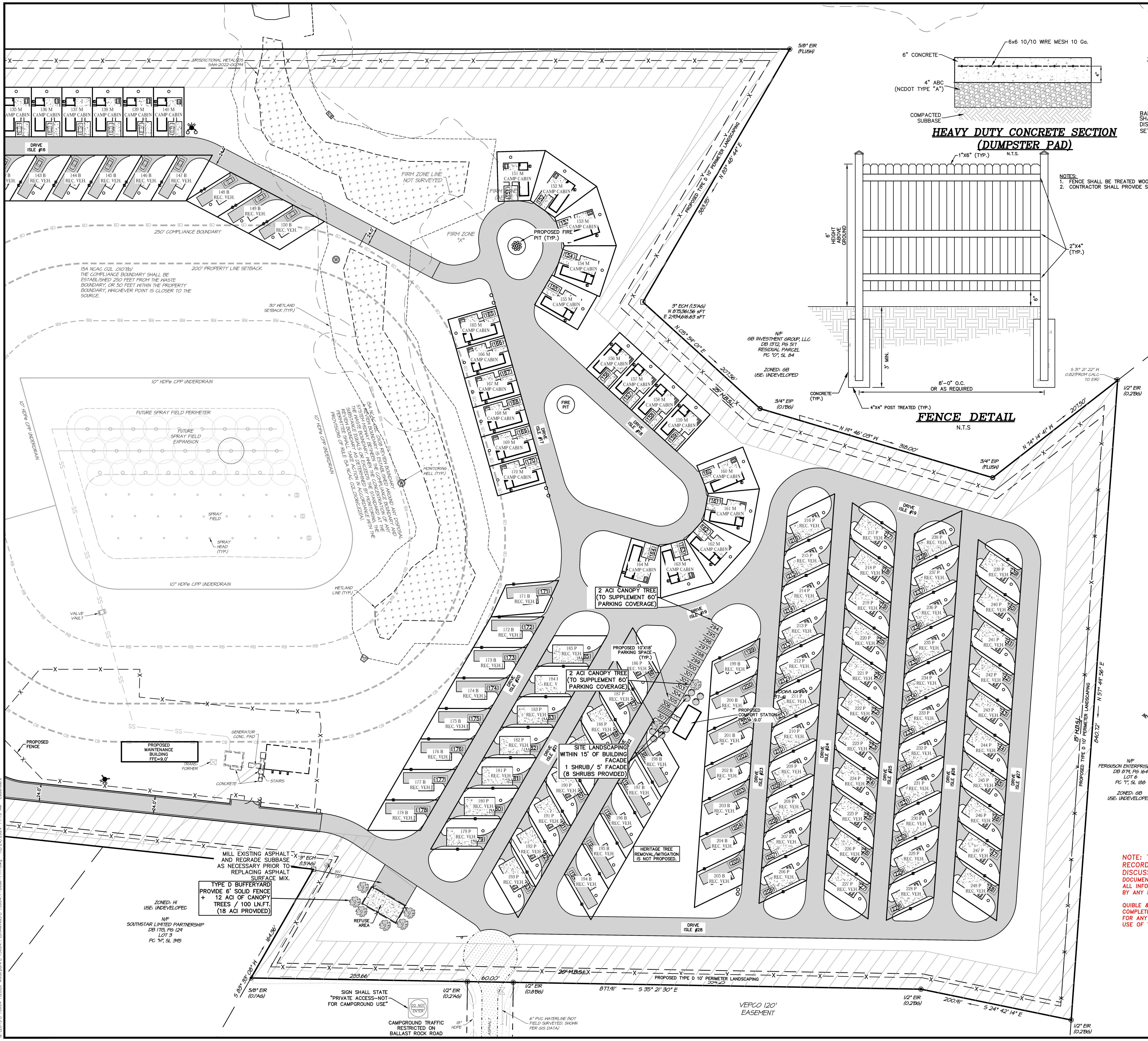
90 CHURCH STREET, SUITE B, BLACK MOUNTAIN, NC 28711, Phone: (828) 357-5149, administrator@quible.com

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER 043652 CATHLEEN M. SAUNDERS
PRELIMINARY NOT FOR CONSTRUCTION
CERTIFICATION

NO.	DATE	REVISIONS

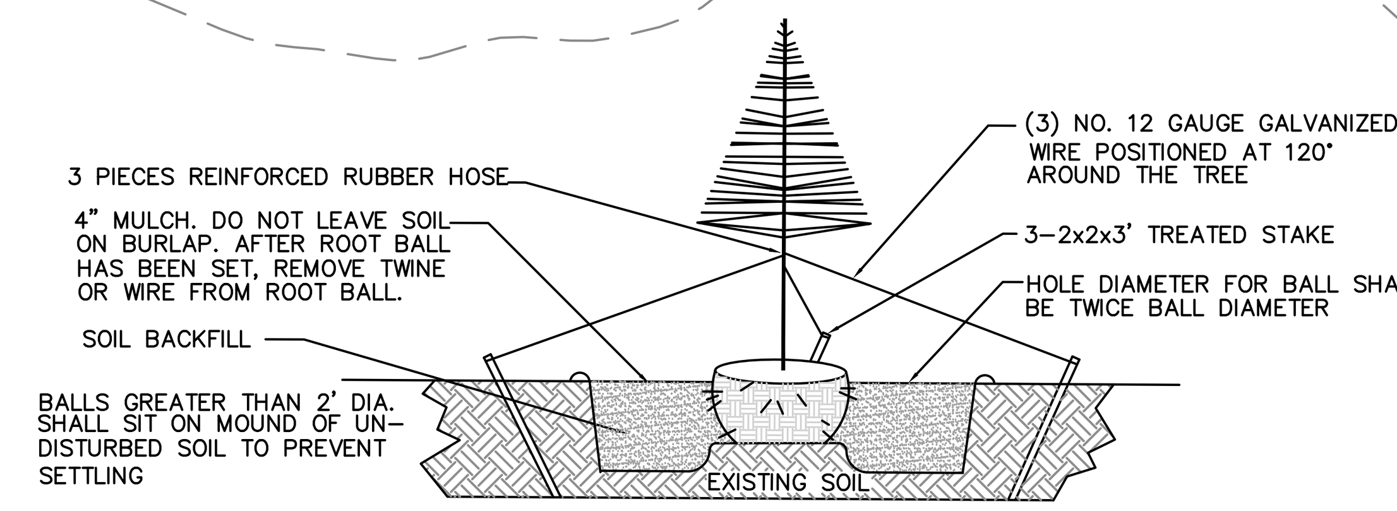
SITE & LANDSCAPING PLAN
H2OBX RV & WATERPARK RESORT
H2OBX, LLC
POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

PROJECT NO.	P15004.1
DESIGNED BY	CMS
DRAWN BY	CMS/JJC
CHECKED BY	MWS
ISSUE DATE	10/24/24



HEAVY DUTY CONCRETE SECTION (DUMPSTER PAD)

N.T.S.



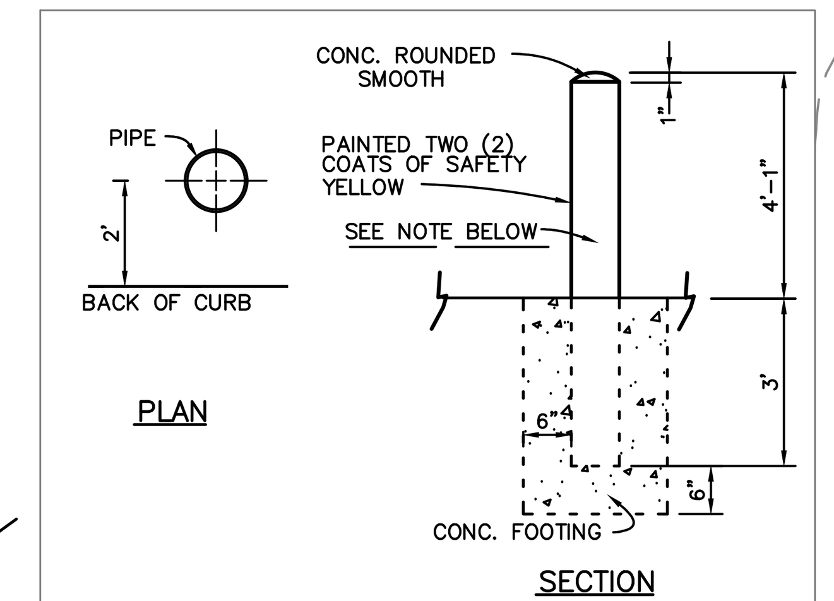
TREE PLANTING DETAIL

N.T.S.

NOTES:
1. FENCE SHALL BE TREATED WOOD OR VINYL AS APPROVED BY OWNER.
2. CONTRACTOR SHALL PROVIDE SUBMITTAL FOR REVIEW BY OWNER.

FENCE DETAIL

N.T.S



NOTE: USE 6" DIA. HEAVY DUTY STEEL (SCH 40) PIPE. FILL PIPE WITH CONCRETE.

BOLLARD DETAIL

N.T.S.

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PRELIMINARY NOT FOR CONSTRUCTION

REVISIONS

SITE & LANDSCAPING PLAN

H2OBX RV & WATERPARK RESORT

H2OBX, LLC

POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

PROJECT NO.	P15004.1
DESIGNED BY	CMS
DRAWN BY	CMS/JJC
CHECKED BY	MWS
ISSUE DATE	10/24/24

SHEET NO. 5 OF 16 SHEETS

NOTES:

1. CURRENT OWNERS: H2OBX LLC
   13 GREEN MOUNTAIN DR
   COHOES, NY 12047
2. TOTAL PARCEL AREA = 4,215,494.77 SF / 96.77 AC (AREAS BY COORDINATE METHOD.)
3. SUBJECT REFERENCES: DB 1512, PG 459 PC "O", SL 84; PC K, SL 55
4. FIELD SURVEY DATES: 03/2016 – 07/2017, 11/17/21 & 11/30/21.
5. HORIZONTAL DATUM IS NAD 83(2011), VERTICAL DATUM IS NAVD 88. ALL DISTANCES ARE HORIZONTAL GROUND AND US SURVEY FEET.
6. PROPERTY IS LOCATED IN NFIP FLOOD ZONES AS SHOWN AND SUBJECT TO CHANGES. BASED ON COMMUNITY CID NO. 370078; PANEL 9837; SUFFIX K. (MAP NUMBER 3720983700K) EFFECTIVE DATE: 12/21/2018
7. THIS SURVEY SUBJECT TO ANY FACTS, INCLUDING BUILDING SETBACK RESTRICTIONS, EASEMENTS, COVENANTS, ETC., THAT MAY BE REVEALED BY A FULL AND ACCURATE TITLE SEARCH.
8. SETBACKS SHOWN ARE PER CURRITUCK COUNTY AND DO NOT REFLECT ANY RESTRICTIVE COVENANTS THAT MAY EXIST.
9. PROJECT SCOPE: THIS PROJECT PROPOSES THE CONSTRUCTION OF AN RV PARK WITH 198 RV SITES, 50 MODULAR SITES, AN AMENITY CENTER, BATHHOUSE AND ASSOCIATED INFRASTRUCTURE IMPROVEMENTS.
10. ALL UTILITIES TO BE PLACED UNDERGROUND UNLESS OTHERWISE NOTED.
11. PRIOR TO LAND DISTURBANCE, A STATE APPROVED SOIL EROSION AND SEDIMENTATION CONTROL PLAN.
12. EXISTING VEGETATION TO BE PRESERVED WHERE POSSIBLE.
13. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT ALL PROPERTY MONUMENTS DURING CONSTRUCTION. DISTURBED OR REMOVED PROPERTY MONUMENTS SHALL BE REPLACED BY A NORTH CAROLINA LICENSED PROFESSIONAL LAND SURVEYOR.
14. A STATE HIGH DENSITY STORMWATER PERMIT IS REQUIRED IN ADVANCE OF ANY ONSITE DISTURBANCE. RECEIVING STREAM: ALBEMARLE SOUND (30)(SB)
15. THIS PLAN SET TO BE UTILIZED FOR THE INSTALLATION OF SITE LAYOUT IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO, GRADING & DRAINAGE, INSTALLATION OF SEDIMENT CONTROL MEASURES, WATER SYSTEM AND WASTEWATER CONNECTION. FOR BUILDING DESIGN AND ASSOCIATED PLUMBING, SEE APPROPRIATE SEPARATE PLANS.
16. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
17. REMOVE TREES, GRASSES, SHRUBS AND OTHER VEGETATION, IMPROVEMENTS OR OBSTRUCTIONS INTERFERING WITH INSTALLATION OF NEW CONSTRUCTION UNLESS NOTED OTHERWISE.
18. THE ENTIRE SITE WILL BE IN FULL COMPLIANCE WITH ALL APPLICABLE NFPA REGULATIONS PERTAINING TO FIRE PROTECTION INCLUDING BUT NOT LIMITED TO NFPA 30 AS WELL AS VOLUME V OF THE NC STATE BUILDING CODE.
19. BUILDING CONSTRUCTION SHALL COMPLY WITH ALL ASPECTS OF THE NORTH CAROLINA BUILDING AND FIRE CODE.
20. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE DRAWINGS, APPLICABLE CURRITUCK COUNTY CODES AND ORDINANCES, AND NCDEQ REGULATIONS. FILL IS NOT ALLOWED WITHIN 10' OF THE PROPERTY LINE.
21. THE LOCATION, DIMENSIONS, AND ELEVATION OF EXISTING STRUCTURES, PIPING, AND UTILITIES SHOWN ARE BASED ON THE BEST AVAILABLE DATA AND ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DATA IN THE FIELD PRIOR TO CONSTRUCTION TO HIS/HER OWN SATISFACTION. THE CONTRACTOR SHALL PERFORM ANY TEST PIT WORK OR PROVIDE LOCATION SERVICES AS REQUIRED TO AVOID CONFLICTS WITH EXISTING UTILITIES. CONTACT NORTH CAROLINA ONE–CALL AT TELEPHONE NO. 1–800–632–4949, 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION TO HAVE UTILITIES MARKED.
22. WATER IS PROVIDED VIA CURRITUCK COUNTY WATER SYSTEM. ALL WATER IMPROVEMENTS SHALL BE IN ACCORDANCE WITH CURRITUCK COUNTY STANDARD WATER SPECIFICATIONS AND DETAILS.
23. SEWER IS PROVIDED VIA ONSITE WASTEWATER TREATMENT PLANT (WWTP).

LEGEND

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- PROPOSED CONCRETE
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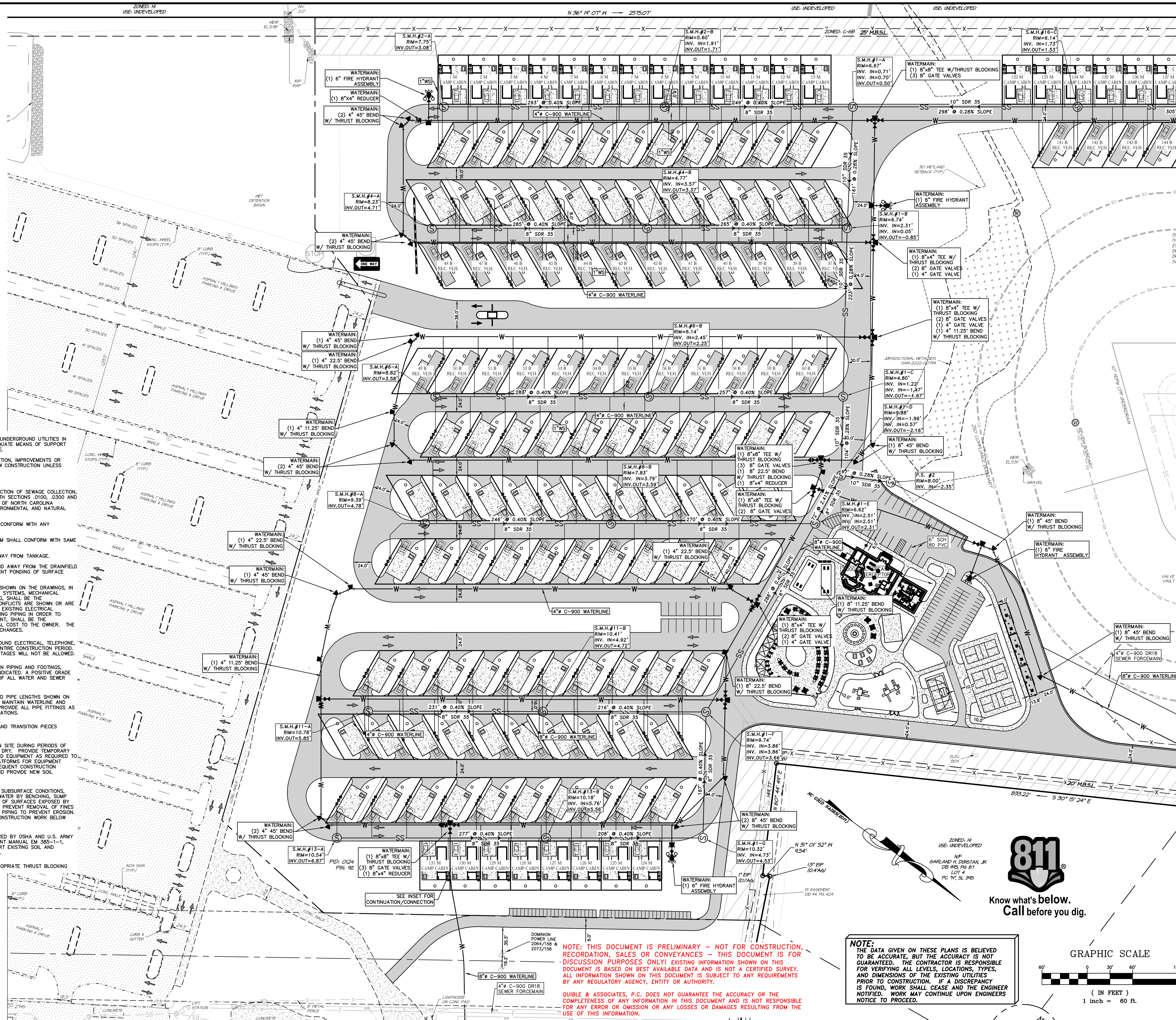
- PROPOSED STORM PIPE
- PROPOSED WATERLINE
- PROPOSED SANITARY SEWER

WASTEWATER COLLECTION NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR LOCATING EXISTING UNDERGROUND UTILITIES IN AREAS OF WORK PRIOR TO ANY WORK. PROVIDE ADEQUATE MEANS OF SUPPORT AND PROTECTION IF UTILITIES ARE TO REMAIN IN PLACE.
2. REMOVE TREES, GRASSES, SHRUBS AND OTHER VEGETATION, IMPROVEMENTS OR OBSTRUCTIONS INTERFERING WITH INSTALLATION OF NEW CONSTRUCTION UNLESS NOTED OTHERWISE.
3. WASTEWATER VIA ON–SITE WWTP.
4. UNLESS OTHERWISE INDICATED ON THE PLAN, CONSTRUCTION OF SEWAGE COLLECTION, TREATMENT AND DISPOSAL SYSTEM IS TO CONFORM WITH SECTIONS .0100, .0300 AND .0400 "WASTE NOT DISCHARGED TO SURFACE WATERS" OF NORTH CAROLINA ADMINISTRATIVE CODE, TITLE 15A DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCE DIVISION OF WATER QUALITY.
5. CONSTRUCTION OF SEWAGE COLLECTION SYSTEM IS TO CONFORM WITH ANY CONDITIONS IMPOSED UTILITIES, INC.
6. MATERIAL USED FOR COLLECTION AND DISPOSAL SYSTEM SHALL CONFORM WITH SAME REQUIREMENTS AS #4 ABOVE.
7. GRADES SHALL BE ESTABLISHED TO DIVERT RUNOFF AWAY FROM TANKAGE.
8. ALL SURFACE RUNOFF SHALL BE DIVERTED AROUND AND AWAY FROM THE DRAINFIELD AREA. FINISH GRADE SHALL BE LANDSCAPED TO PREVENT PONDING OF SURFACE WATER.
9. CHANGES IN NEW PIPING OR STRUCTURES FROM THAT SHOWN ON THE DRAWINGS, IN ORDER TO AVOID CONFLICTS WITH EXISTING ELECTRICAL SYSTEMS, MECHANICAL SYSTEMS, EQUIPMENT, STRUCTURES, OR EXISTING PIPING, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, WHETHER THE CONFLICTS ARE SHOWN OR ARE DISCOVERED IN THE FIELD. LIKEWISE, ALTERATIONS TO EXISTING ELECTRICAL SYSTEMS, MECHANICAL SYSTEMS, EQUIPMENT, OR EXISTING PIPING IN ORDER TO ACCOMMODATE NEW PIPING, STRUCTURES AND EQUIPMENT, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THE OWNER AND THE ENGINEER MUST APPROVE ALL SUCH CHANGES.
10. MAINTAIN AND PROTECT ALL OVERHEAD AND UNDERGROUND ELECTRICAL, TELEPHONE, CABLE TV, WATER, AND ALL OTHER UTILITIES DURING ENTIRE CONSTRUCTION PERIOD. WATER SERVICE INTERRUPTIONS AND OTHER UTILITY OUTAGES WILL NOT BE ALLOWED.
11. PROVIDE A MINIMUM OF 18 INCHES CLEARANCE BETWEEN PIPING AND FOOTINGS, STRUCTURES, AND OTHER PIPING UNLESS OTHERWISE INDICATED. A POSITIVE GRADE SHALL BE MAINTAINED FOR THE VERTICAL ALIGNMENT OF ALL WATER AND SEWER PIPING TO ELIMINATE THE FORMATION OF AIR POCKETS.
12. HORIZONTAL DISTANCE IS INDICATED FOR ALL PROPOSED PIPE LENGTHS SHOWN ON THE DRAWINGS. DEFLECT PIPE JOINTS AS REQUIRED TO MAINTAIN WATERLINE AND SEWER ALIGNMENTS SHOWN. THE CONTRACTOR SHALL PROVIDE ALL PIPE FITTINGS AS REQUIRED FOR COMPLETE AND OPERABLE PIPE INSTALLATIONS.
13. CONTRACTOR SHALL PROVIDE ALL CONNECTING PIPES AND TRANSITION PIECES REQUIRED TO MAKE FINAL PIPING CONNECTIONS.
14. SURFACE DRAINAGE: COMPLETELY DRAIN CONSTRUCTION SITE DURING PERIODS OF CONSTRUCTION TO KEEP SOIL MATERIALS SUFFICIENTLY DRY. PROVIDE TEMPORARY DITCHES, SWALES, AND OTHER DRAINAGE FEATURES AND EQUIPMENT AS REQUIRED TO MAINTAIN DRY SOILS. WHEN UNSUITABLE WORKING PLATFORMS FOR EQUIPMENT OPERATION AND UNSUITABLE SOIL SUPPORT FOR SUBSEQUENT CONSTRUCTION FEATURES DEVELOP, REMOVE UNSUITABLE MATERIAL AND PROVIDE NEW SOIL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
15. SUBSURFACE DRAINAGE: CONSIDER SITE SURFACE AND SUBSURFACE CONDITIONS, AVAILABLE SOIL, AND HYDROLOGICAL DATA. REMOVE WATER BY BENCHING, SUMP PUMPING, OR OTHER METHODS TO PREVENT SOFTENING OF SURFACES EXPOSED BY EXCAVATION, USE FILTERS ON DEWATERING DEVICES TO PREVENT REMOVAL OF FINES FROM SOIL, PROVIDE EROSION CONTROL AT OUTLET OR PIPING TO PREVENT EROSION. OPERATE DEWATERING SYSTEM CONTINUOUSLY UNTIL CONSTRUCTION WORK BELOW EXISTING WATER LEVELS IS COMPLETE.
16. CONSTRUCT EXCAVATION SUPPORT SYSTEMS AS REQUIRED BY OSHA AND U.S. ARMY CORPS OF ENGINEERS SAFETY AND HEALTH REQUIREMENT MANUAL EM 385–1–1, SECTION 25 AS A THROUGH E TO ADEQUATELY SUPPORT EXISTING SOIL AND ADJACENT STRUCTURES DURING EXCAVATION ACTIVITIES.
17. ALL TEES AND BENDS SHALL BE INSTALLED WITH APPROPRIATE THRUST BLOCKING SHOWN IN DETIALS.



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60' 0 30' 60' 120'
(IN FEET)
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NORTH CAROLINA PROFESSIONAL SEAL ENGINEER 043652 CATHLEEN M. SAUNDERS
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CERTIFICATION

REVISIONS

NO.	DATE	

UTILITY PLAN

H2OBX RV & WATERPARK RESORT
H2OBX, LLC

POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

PROJECT NO.	P15004.1
DESIGNED BY	CMS
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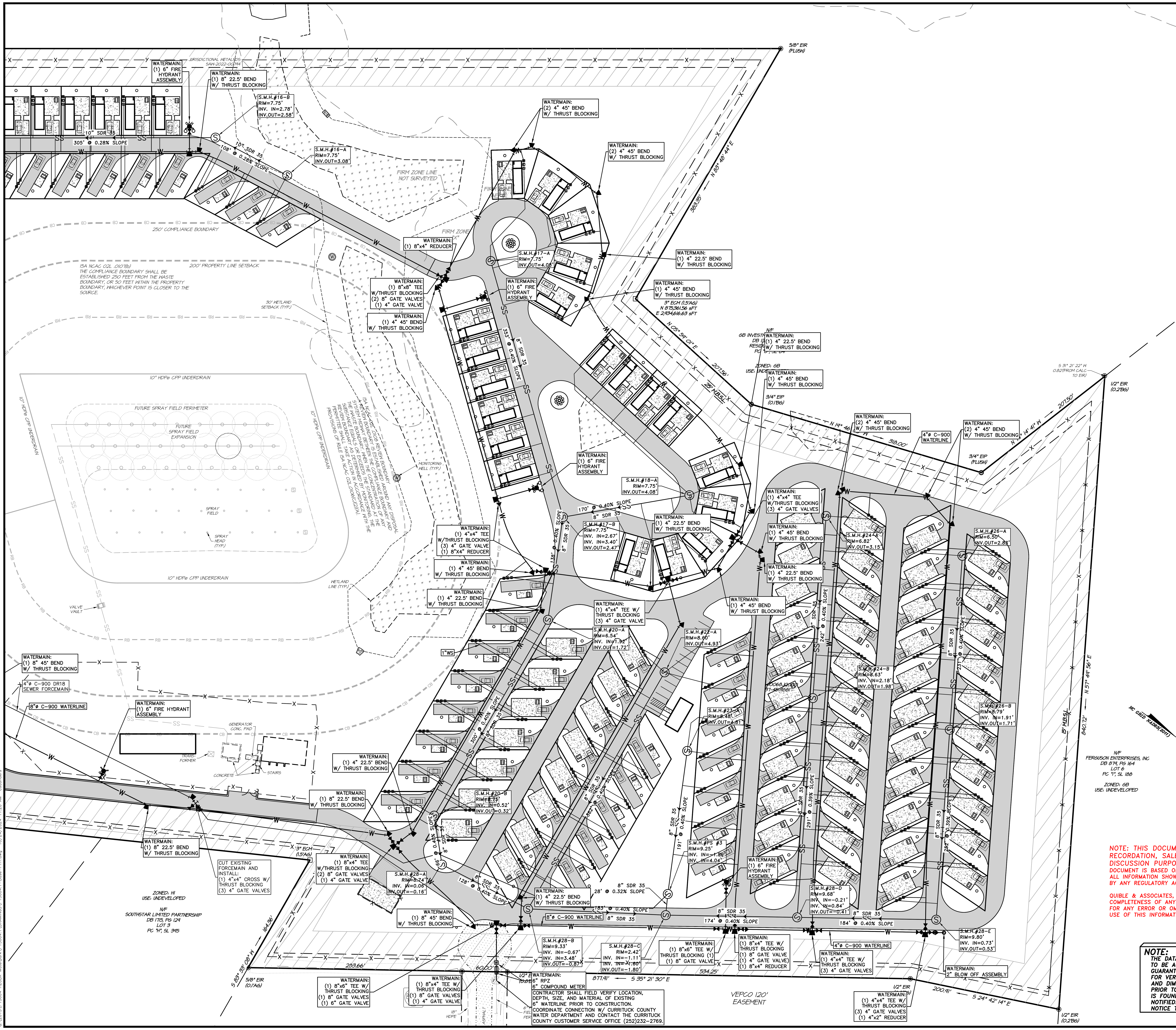
ISSUE DATE	10/24/24

SHEET NO. 6 OF 16 SHEETS



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H2OBX, LLC

POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

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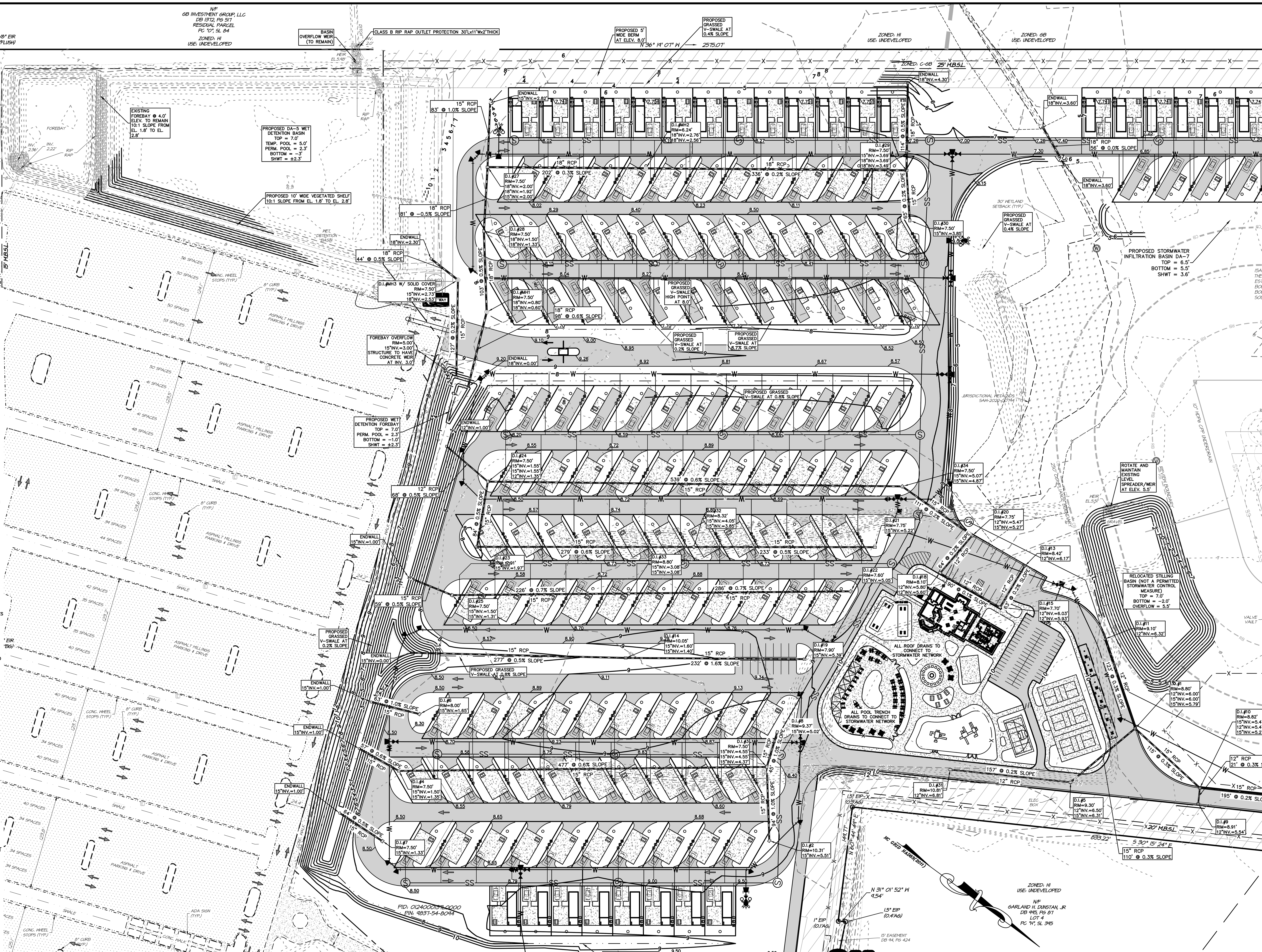
SHEET NO. 7 OF 16 SHEETS

WET DETENTION BASIN SHALL BE UTILIZED AS A SEDIMENT BASIN FOR EROSION CONTROLS DURING CONSTRUCTION. THE BASIN OUTLET STRUCTURE SHALL BE FITTED WITH A "FAIRCLOTH SKIMMER" DURING CONSTRUCTION (SEE DETAILS). UPON COMPLETION OF CONSTRUCTION ACTIVITIES, THE FAIR CLOTH SKIMMER SHALL BE REMOVED AND REPLACED WITH ORIFICE DEVICE PER OUTLET STRUCTURE DETAIL. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE DETENTION BASIN UPON COMPLETION OF CONSTRUCTION ACTIVITIES.



NOTES:

1. CURRENT OWNERS: H2OBX LLC
   13 GREEN MOUNTAIN DR
   COHOES, NY 12047
2. TOTAL PARCEL AREA = 4,215,494.77 SF / 96.77 AC (AREAS BY COORDINATE METHOD.)
3. SUBJECT REFERENCES: DB 1512, PG 459 PC "O", SL 84; PC K, SL 55
4. FIELD SURVEY DATES: 03/2016 – 07/2017, 11/17/21 & 11/30/21.
5. HORIZONTAL DATUM IS NAD 83(2011), VERTICAL DATUM IS NAVD 88. ALL DISTANCES ARE HORIZONTAL GROUND AND US SURVEY FEET.
6. PROPERTY IS LOCATED IN NFIP FLOOD ZONES AS SHOWN AND SUBJECT TO CHANGES. BASED ON COMMUNITY CID NO. 370078; PANEL 9837; SUFFIX K. (MAP NUMBER 3720983700K) EFFECTIVE DATE: 12/21/2018
7. THIS SURVEY SUBJECT TO ANY FACTS, INCLUDING BUILDING SETBACK RESTRICTIONS, EASEMENTS, COVENANTS, ETC., THAT MAY BE REVEALED BY A FULL AND ACCURATE TITLE SEARCH.
8. SETBACKS SHOWN ARE PER CURRITUCK COUNTY AND DO NOT REFLECT ANY RESTRICTIVE COVENANTS THAT MAY EXIST.
9. PROJECT SCOPE: THIS PROJECT PROPOSES THE CONSTRUCTION OF AN RV PARK WITH 198 RV SITES, 50 MODULAR SITES, AN AMENITY CENTER, BATHHOUSE AND ASSOCIATED INFRASTRUCTURE IMPROVEMENTS.
10. ALL UTILITIES TO BE PLACED UNDERGROUND UNLESS OTHERWISE NOTED.
11. PRIOR TO LAND DISTURBANCE, A STATE APPROVED SOIL EROSION AND SEDIMENTATION CONTROL PLAN.
12. EXISTING VEGETATION TO BE PRESERVED WHERE POSSIBLE.
13. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT ALL PROPERTY MONUMENTS DURING CONSTRUCTION. DISTURBED OR REMOVED PROPERTY MONUMENTS SHALL BE REPLACED BY A NORTH CAROLINA LICENSED PROFESSIONAL LAND SURVEYOR.
14. A STATE HIGH DENSITY STORMWATER PERMIT IS REQUIRED IN ADVANCE OF ANY ONSITE DISTURBANCE. RECEIVING STREAM: ALBEMARLE SOUND (30)(SB)
15. THIS PLAN SET TO BE UTILIZED FOR THE INSTALLATION OF SITE LAYOUT IMPROVEMENTS INCLUDING, BUT NOT LIMITED TO, GRADING & DRAINAGE, INSTALLATION OF SEDIMENT CONTROL MEASURES, WATER SYSTEM AND WASTEWATER CONNECTION. FOR BUILDING DESIGN AND ASSOCIATED PLUMBING, SEE APPROPRIATE SEPARATE PLANS.
16. ALL DIMENSIONS ARE TO EDGE OF PAVEMENT UNLESS OTHERWISE NOTED.
17. REMOVE TREES, GRASSES, SHRUBS AND OTHER VEGETATION, IMPROVEMENTS OR OBSTRUCTIONS INTERFERING WITH INSTALLATION OF NEW CONSTRUCTION UNLESS NOTED OTHERWISE.
18. THE ENTIRE SITE WILL BE IN FULL COMPLIANCE WITH ALL APPLICABLE NFPA REGULATIONS PERTAINING TO FIRE PROTECTION INCLUDING BUT NOT LIMITED TO NFPA 30 AS WELL AS VOLUME V OF THE NC STATE BUILDING CODE.
19. BUILDING CONSTRUCTION SHALL COMPLY WITH ALL ASPECTS OF THE NORTH CAROLINA BUILDING AND FIRE CODE.
20. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE DRAWINGS, APPLICABLE CURRITUCK COUNTY CODES AND ORDINANCES, AND NCDEQ REGULATIONS. FILL IS NOT ALLOWED WITHIN 10' OF THE PROPERTY LINE.
21. THE LOCATION, DIMENSIONS, AND ELEVATION OF EXISTING STRUCTURES, PIPING, AND UTILITIES SHOWN ARE BASED ON THE BEST AVAILABLE DATA AND ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY ALL DATA IN THE FIELD PRIOR TO CONSTRUCTION TO HIS/HER OWN SATISFACTION. THE CONTRACTOR SHALL PERFORM ANY TEST PIT WORK OR PROVIDE LOCATION SERVICES AS REQUIRED TO AVOID CONFLICTS WITH EXISTING UTILITIES. CONTACT NORTH CAROLINA ONE-CALL AT TELEPHONE NO. 1-800-632-4949, 48 HOURS PRIOR TO PERFORMING ANY EXCAVATION TO HAVE UTILITIES MARKED.
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23. SEWER IS PROVIDED VIA ONSITE WASTEWATER TREATMENT PLANT (WWTP).

LEGEND

Symbol	Description	Symbol	Description
	EX. IRON ROD		EXISTING ASPHALT PAVEMENT
	EX. DRILL HOLE		EXISTING CONCRETE
	EX. MAG NAIL		PROPOSED CONCRETE
	EX. UTILITY POLE		PROPOSED ASPHALT
	EX. FIRE HYDRANT		PROPOSED RIP RAP
WV	EX. WATER VALVE	10	EXISTING CONTOUR
	EX. SEWER MANHOLE	10.0'	EXISTING SPOT GRADE
W	EX. WATER METER	9.0	PROPOSED CONTOUR
E	EX. ELECTRICAL CONNECTION	9.0	PROPOSED SPOT GRADE (TOP OF ASPHALT/FLOW LINE UNLESS OTHERWISE NOTED)
	EX. EXTERIOR LIGHT	9.00'TC	PROPOSED TOP OF CONCRETE ELEV.
	EX. LIGHT POLE	1.0%	PROPOSED FLOW DIRECTION AND SLOPE

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GRAPHIC SCALE
60' 0 30' 60' 120'
(IN FEET)
1 inch = 60 ft.

Quible & Associates, P.C.
NC License#: C-0208
SINCE 1959
ENGINEERING** * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING**
ENGINEERING/SURVEYING NOT OFFERED AT BLACK MTN. OFFICE
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90 CHURCH STREET, SUITE B, BLACK MOUNTAIN, NC 28711, Phone: (828) 357-5149, administrator@quible.com

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043652 CATHLEEN M. SAUNDERS
PRELIMINARY NOT FOR CONSTRUCTION
CERTIFICATION

NO.	DATE	REVISIONS

GRADING & DRAINAGE PLAN

H2OBX RV & WATERPARK RESORT
H2OBX, LLC

POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

PROJECT NO.	P15004.1
DESIGNED BY	CMS
DRAWN BY	CMS/JJC
CHECKED BY	MWS
ISSUE DATE	10/24/24

SHEET NO. 8 OF 16 SHEETS

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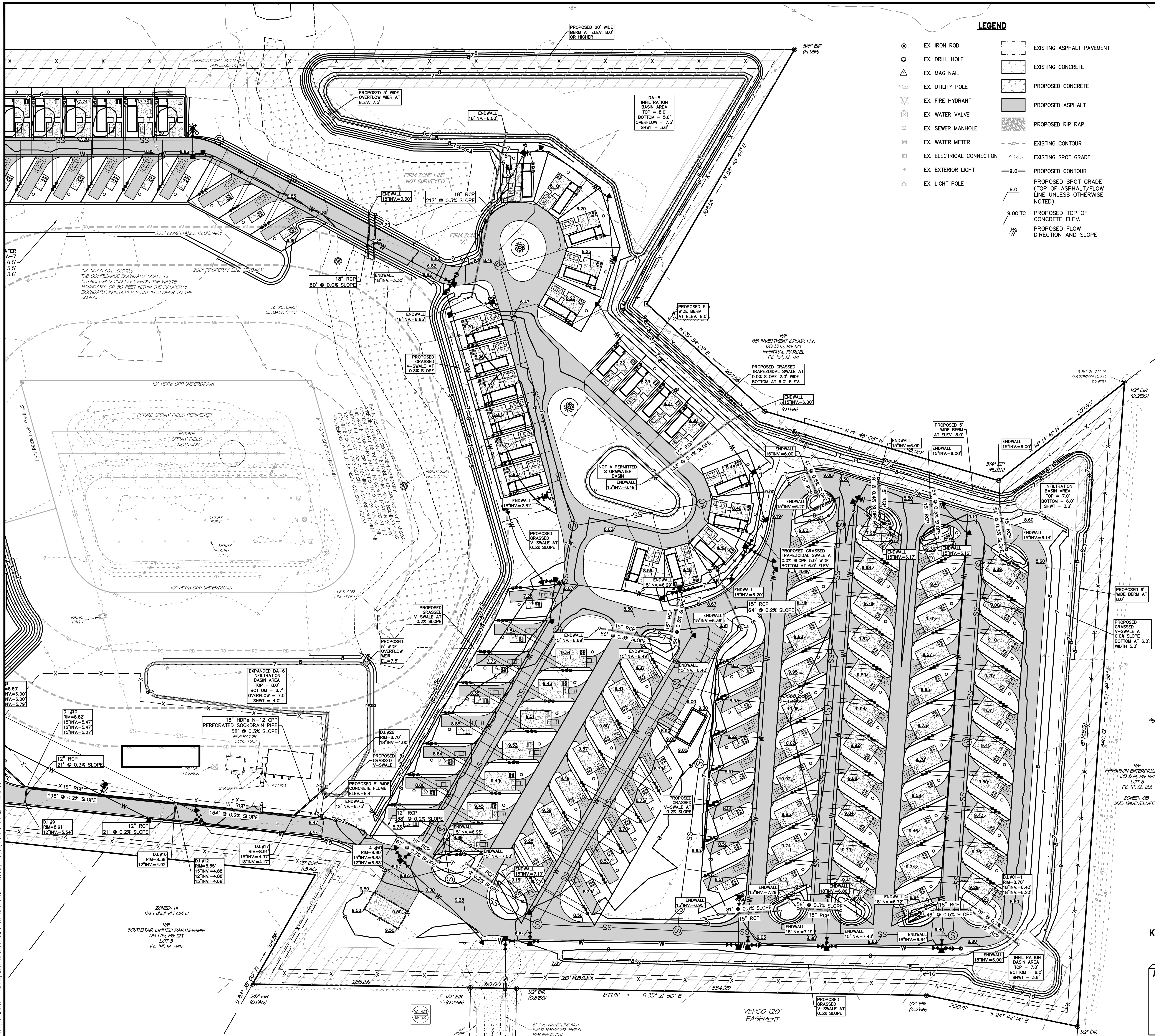

LEGEND

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Certificate		
22	The major stormwater plan shall contain the following certificate: I, Kenneth Ellis, owner/agent hereby certify the information included on this and attached pages is true and correct to the best of my knowledge. On the plan entitled H2OBX RV & Waterpark Resort, stormwater drainage improvements shall be installed according to these plans and specifications and approved by Currituck County. Yearly inspections are required as part of the stormwater plan. The owner is responsible for all maintenance required. Currituck County assumes no responsibility for the design, maintenance, or performance of the stormwater improvements. Date: 9/24/24 Owner/Agent: [signature]	

Know what's **below.** **Call** before you dig.

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GRADING & DRAINAGE PLAN

H2OBX RV & WATERPARK RESORT

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POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

PROJECT NO.	P15004.1
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DRAWN BY	CMS/JJC
CHECKED BY	MWS
ISSUE DATE	10/24/24

SHEET NO. 9 OF 16 SHEETS

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SOIL EROSION & SEDIMENTATION CONTROL NOTES:

1. AREA TO BE DISTURBED: 60.5 AC.)
2. PROVIDE A GROUNDCOVER STABILIZATION (TEMPORARY OR PERMANENT) ON ALL DENUDED DOWNSTREAM SURFACES FOLLOWING THE COMPLETION OF LAND DISTURBING ACTIVITIES PER THE CRITERIA LISTED BELOW:
   a. PERIMETER DIKES, BERMS, SWALES, DITCHES AND SLOPES SHALL BE STABILIZED IN 7 DAYS.
   b. HIGH QUALITY WATER (HQW) ZONES SHALL BE STABILIZED IN 7 DAYS.
   c. DOWNSTREAM SLOPES STEEPER THAN 3:1 SHALL BE STABILIZED IN 7 DAYS. IF SLOPES ARE 10' OR LESS AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
   d. DOWNSTREAM SLOPES 3:1 OR FLATTER AND LESS THAN 50' IN LENGTH SHALL BE STABILIZED IN 14 DAYS. SLOPES 3:1 OR FLATTER EXCEEDING 50' IN LENGTH SHALL BE STABILIZED IN 7 DAYS.
   e. ALL OTHER DOWNSTREAM AREAS WITH SLOPES 4:1 OR FLATTER SHALL BE STABILIZED WITHIN 14 DAYS.
3. IF LAND DISTURBING ACTIVITIES OCCUR OUTSIDE THE PERMANENT VEGETATION SEEDING DATES (APR. 1– SEP.30) THEN TEMPORARY VEGETATION SEEDING SPECIFICATIONS SHALL BE FOLLOWED FOR PLANTING UNTIL THE NEXT APPROPRIATE PERMANENT SEEDING PERIOD, AT WHICH TIME PERMANENT VEGETATION SHALL BE ESTABLISHED ACCORDING TO PERMANENT VEGETATION SEEDING SPECIFICATIONS (SEE PERM. & TEMP. SEEDING SPECIFICATIONS).
4. IF EXCESSIVE WIND EROSION OR STORMWATER RUNOFF EROSION DEVELOPS DURING TIME OF CONSTRUCTION ANY LOCATION ON THE PROJECT SITE, ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED IMMEDIATELY AS DIRECTED BY THE ENGINEER TO ADDRESS THE PROBLEM AREA AND PREVENT DAMAGE TO ADJACENT PROPERTIES.
5. SOIL EROSION AND SEDIMENTATION CONTROLS TO BE INSPECTED, MAINTAINED AND REPAIRED AS NECESSARY UNTIL PERMANENT CONTROLS ARE ESTABLISHED.
   a. A RAIN GAUGE MUST MUST BE KEPT ON SITE.
   b. DEDICATED DEMOLITION AND OTHER WASTE AREAS AND EARTHEN MATERIAL STOCKPILES MUST BE LOCATED AT LEAST 50 FEET FROM DRAINS OR STREAMS UNLESS NO ALTERNATIVE IS FEASIBLE.
   c. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSPECTED AT LEAST ONCE A WEEK AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN A HALF INCH (DURING A 24 HOUR PERIOD). IMMEDIATE CORRECTIVE ACTION MUST BE TAKEN FOR ANY DEVICE FAILURE.
   d. INSPECT ALL OUTLETS WHERE RUNOFF LEAVES SITE AND EVALUATE EFFECT ON NEARBY STREAMS. TAKE CORRECTIVE ACTION IF NECESSARY.
   e. MAINTAIN RECORDS OF INSPECTIONS AND CORRECTIVE ACTIONS.
   f. EARTHWORK NOTE: OFFSITE BORROW MATERIAL SHALL COME FROM AN NCDEQ LAND QUALITY SECTION APPROVED SITE. OFFSITE DISPOSAL OF EXCESS MATERIAL SHALL BE TO AN NCDEQ LAND QUALITY SECTION APPROVED SITE.

SOIL EROSION & SEDIMENTATION CONTROL NOTES:

PRECONSTRUCTION:

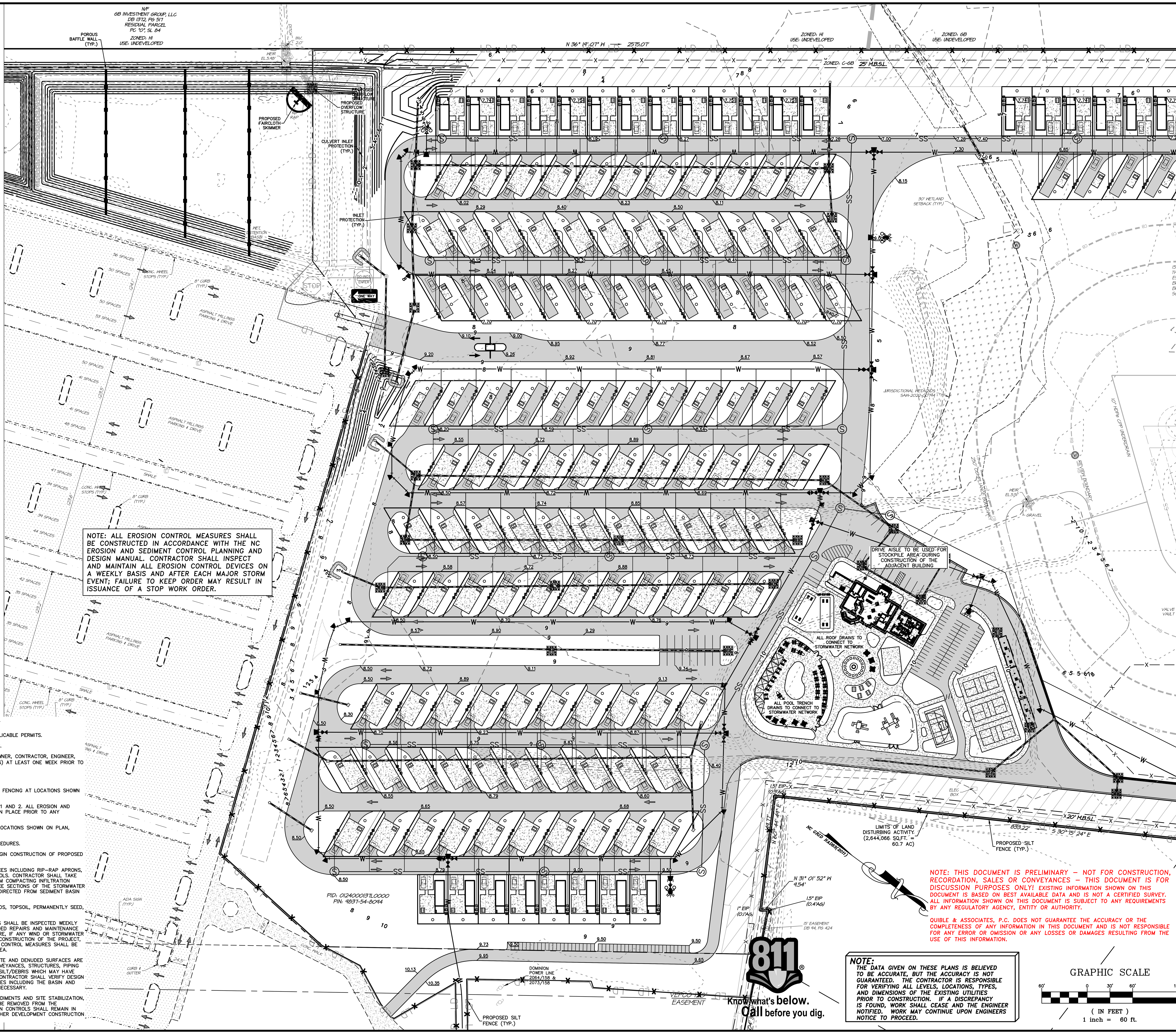
1) OBTAIN PLAN APPROVAL AND OTHER APPLICABLE PERMITS.
2) FLAG AND/OR ROUGH STAKE WORK LIMITS.
3) HOLD PRECONSTRUCTION CONFERENCE (OWNER, CONTRACTOR, ENGINEER, AND APPROPRIATE GOVERNMENT OFFICIALS) AT LEAST ONE WEEK PRIOR TO START OF CONSTRUCTION ACTIVITIES.

CONSTRUCTION:

4) INSTALL CONSTRUCTION ENTRANCE & SILT FENCING AT LOCATIONS SHOWN ON PLAN.
5) CONSTRUCT TEMPORARY SEDIMENT BASIN 1 AND 2. ALL EROSION AND SEDIMENT CONTROL MEASURES MUST BE IN PLACE PRIOR TO ANY DEMOLITION.
6) INSTALL TEMPORARY DIVERSION DIKE AT LOCATIONS SHOWN ON PLAN, SEED, & STABILIZE.
7) COMPLETE CLEARING AND GRUBBING PROCEDURES.
8) GRADE SITE ACCORDING TO PLAN AND BEGIN CONSTRUCTION OF PROPOSED IMPROVEMENTS.
9) INSTALL CONTRIBUTING STORM CONVEYANCES INCLUDING RIP-RAP APRONS, MATING AND ASSOCIATED EROSION CONTROLS. CONTRACTOR SHALL TAKE NECESSARY PRECAUTION TO REFRAIN FROM COMPACTING INFILTRATION BASIN AREAS DURING CONSTRUCTION. ONCE SECTIONS OF THE STORMWATER NETWORK ARE INSTALLED, FLOW MAY BE DIRECTED FROM SEDIMENT BASIN 2 TO SEDIMENT BASIN 1.
10) COMPLETE FINAL GRADING OF THE GROUNDS, TOPSOIL, PERMANENTLY SEED, LANDSCAPE, AND MULCH.
11) ALL EROSION & SEDIMENTATION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER HEAVY RAINFALL EVENT. NEEDED REPAIRS AND MAINTENANCE WILL BE MADE IMMEDIATELY. FURTHERMORE, IF ANY WIND OR STORMWATER RUNOFF EROSION DEVELOPS DURING THE CONSTRUCTION OF THE PROJECT, ADDITIONAL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED TO ADDRESS THE PROBLEM AREA.
12) ONCE THE SITE CONSTRUCTION IS COMPLETE AND DENUDED SURFACES ARE FULLY STABILIZED; ALL STORMWATER CONVEYANCES, STRUCTURES, PIPING AND BASINS SHALL BE CLEANED OF ALL SILT/DEBRIS WHICH MAY HAVE ACCUMULATED DURING CONSTRUCTION. CONTRACTOR SHALL VERIFY DESIGN GRADES OF ALL STORMWATER CONVEYANCES INCLUDING THE BASIN AND RESTORE TO DESIGN SPECIFICATIONS AS NECESSARY.
13) UPON THE REMOVAL OF ACCUMULATED SEDIMENTS AND SITE STABILIZATION, ALL REMAINING EROSION CONTROLS MAY BE REMOVED FROM THE DEVELOPMENT. ALL DOWNSTREAM EROSION CONTROLS SHALL REMAIN IN PLACE UNTIL THE COMPLETION OF ALL OTHER DEVELOPMENT CONSTRUCTION ACTIVITIES.

LEGEND

- EXISTING ASPHALT PAVEMEN
- EXISTING CONCRETE
- EX. IRON ROD
- EX. DRILL HOLE
- EX. MAG NAIL
- EX. UTILITY POLE
- EXISTING CONTOUR
- EXISTING SPOT GRADE
- 9.0 PROPOSED CONTOUR
- PROPOSED FLOW DIRECTION AND SLOPE
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED CULVERT INLET PROTECTION
- PROPOSED FENCE
- PROPOSED SILT FENCE
- PROPOSED INLET PROTECTION



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REVISIONS — NO. | DATE

SOIL EROSION & SEDIMENT CONTROL PLAN

H2OBX RV & WATERPARK RESORT
H2OBX, LLC

POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

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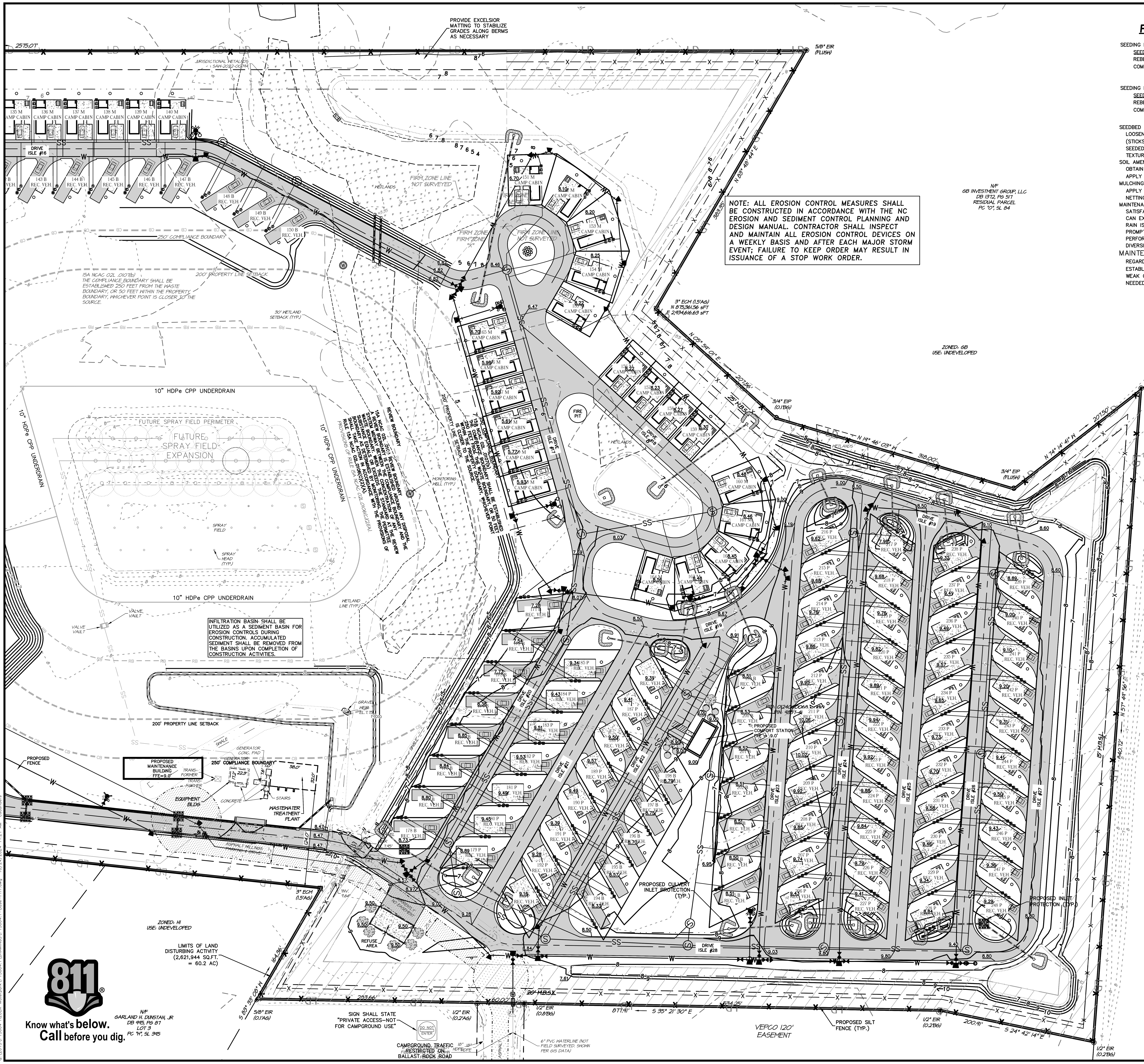

PERMANENT VEGETATION

SEEDING DATES: APRIL 1 – AUGUST 31:

SEED MIXTURE	APPLICATION RATES/ACRE
REBEL II FESCUE	130 LBS.
COMMON BERMUDA 'SAHARA" (HULLED)	215 LBS.

SEEDING DATES: SEPT. 1 – MARCH 31:

SEED MIXTURE	APPLICATION RATES/ACRE
REBEL II FESCUE	250 LBS.
COMMON BERMUDA 'SAHARA" (UNHULLED)	215 LBS.

TEMPORARY VEGETATION

SEEDING DATES: AUG. 16 – APRIL 15:

SEED MIXTURE	APPLICATION RATES/ACRE
RYE GRAIN	120 LBS

SEEDING DATES: APRIL 16 – AUG. 15:

SEED MIXTURE	APPLICATION RATES/ACRE
GERMAN MILLET	40 LBS

SEEDBED PREPARATION:
LOOSEN SOILS TO A DEPTH OF 6–8 INCHES USING A RIPPER, HARROW, OR CHISEL PLOW, BREAK UP CLODS, REMOVE UNACCEPTABLE GROWTH (STICKS, ROOTS), STONES (>3"), AND OTHER MATERIALS, AND WORK THE TOP 3–4 INCHES OF THE SOIL INTO A SEEDBED. THE AREA TO BE SEEDED SHALL BE RE-COMPACTED UTILIZING A CULTIPACKER ROLLER AND A SMOOTH EVEN SOIL SURFACE WITH A LOOSE, UNIFORMLY FINE TEXTURE SHALL BE THE FINISHED GRADE.

SOIL AMENDMENTS:
OBTAIN A SOIL TEST TO DETERMINE APPLICATION RATES AND FOLLOW RECOMMENDATIONS OF SOIL TESTS. WHEN A SOIL TEST IS NOT POSSIBLE, APPLY 3,000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 1,000 LB/ACRE 10-10-10 STARTER FERTILIZER.

MULCHING:
APPLY 4,000 LB/ACRE GRAIN STRAW OR EQUIVALENT COVER OF ANOTHER SUITABLE MULCH. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, ROVING OR BY CRIMPING WITH A MULCH ANCHORING TOOL.

MAINTENANCE:
SATISFACTORY STABILIZATION AND EROSION CONTROL REQUIRES A COMPLETE VEGETATIVE COVER. EVEN SMALL BREACHES IN VEGETATIVE COVER CAN EXPAND RAPIDLY AND, IF LEFT UNATTENDED, CAN ALLOW SERIOUS SOIL LOSS FROM AN OTHERWISE STABLE SURFACE. A SINGLE HEAVY RAIN IS OFTEN SUFFICIENT TO GREATLY ENLARGE BARE SPOTS, AND THE LONGER REPAIRS ARE DELAYED, THE MORE COSTLY THEY BECOME. PROMPT ACTION WILL KEEP SEDIMENT LOSS AND REPAIR COST DOWN. NEW SEEDLINGS SHOULD BE INSPECTED FREQUENTLY AND MAINTENANCE PERFORMED AS NEEDED. IF RILLS AND GULLIES DEVELOP, THEY MUST BE FILLED IN, RE-SEEDED, AND MULCHED AS SOON AS POSSIBLE. DIVERSIONS MAY BE NEEDED UNTIL NEW PLANTS TAKE HOLD.

MAINTENANCE REQUIREMENTS EXTEND BEYOND THE SEEDING PHASE. (COMPLETE VEGETATIVE COVER IS REQUIRED REGARDLESS OF COUNTY ISSUANCE OF A CERTIFICATE OF OCCUPANCY AND FINAL PAYMENT WILL NOT BE AWARDED UNTIL COMPLETE ESTABLISHMENT OF VEGETATIVE COVER.)
WEAK OR DAMAGED SPOTS MUST BE RELIMED, FERTILIZED, MULCHED, AND RESEEDED AS PROMPTLY AS POSSIBLE. REFERTILIZATION MAY BE NEEDED TO MAINTAIN PRODUCTIVE STANDS.

LEGEND

- EXISTING ASPHALT PAVEMENT
- EXISTING CONCRETE
- EX. IRON ROD
- EX. DRILL HOLE
- EX. MAG NAIL
- EX. UTILITY POLE
- EXISTING CONTOUR
- EXISTING SPOT GRADE
- 9.0 PROPOSED CONTOUR
- PROPOSED FLOW DIRECTION AND SLOPE
- PROPOSED LIMITS OF DISTURBANCE
- PROPOSED CULVERT INLET PROTECTION
- PROPOSED FENCE
- PROPOSED SILT FENCE
- PROPOSED INLET PROTECTION

NOTE: THIS DOCUMENT IS PRELIMINARY – NOT FOR CONSTRUCTION, RECORDATION, SALES OR CONVEYANCES – THIS DOCUMENT IS FOR DISCUSSION PURPOSES ONLY! EXISTING INFORMATION SHOWN ON THIS DOCUMENT IS BASED ON BEST AVAILABLE DATA AND IS NOT A CERTIFIED SURVEY. ALL INFORMATION SHOWN ON THIS DOCUMENT IS SUBJECT TO ANY REQUIREMENTS BY ANY REGULATORY AGENCY, ENTITY OR AUTHORITY.

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GRAPHIC SCALE
60' 0 30' 60' 120'
(IN FEET)
1 inch = 60 ft.

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8466 CARATOKE HWY, BLDG 400, POWELLS POINT, NC 27966, Phone: (252) 491-8147, administrator@quible.com
90 CHURCH STREET, SUITE B, BLACK MOUNTAIN, NC 28711, Phone: (828) 357-5149, administrator@quible.com

NORTH CAROLINA PROFESSIONAL SEAL 043652 ENGINEER CATHLEEN M. SAUNDERS
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CERTIFICATION

NO.	DATE	REVISIONS

SOIL EROSION & SEDIMENT CONTROL PLAN

H2OBX RV & WATERPARK RESORT

H2OBX, LLC

POPLAR BRANCH TOWNSHIP — CURRITUCK COUNTY — NORTH CAROLINA

PROJECT NO.	P15004.1
DESIGNED BY	CMS
DRAWN BY	CMS/JJC
CHECKED BY	MWS
ISSUE DATE	09/26/24

SHEET NO. 11 OF 16 SHEETS

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Currituck County, North Carolina

September 16, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:10,400 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 1:20,000.

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: Currituck County, North Carolina
Survey Area Data: Version 23, 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: May 18, 2022—May 31, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BoA	Bojac loamy sand, 0 to 3 percent slopes	2.5	0.6%
Bp	Borrow pit	2.0	0.5%
Cb	Conaby muck	39.7	9.2%
CnA	Conetoe loamy sand, 0 to 3 percent slopes	46.2	10.7%
Cu	Currituck mucky peat	10.0	2.3%
Ds	Dragston loamy fine sand	116.9	27.1%
Mu	Munden loamy sand	143.2	33.2%
Po	Ponzer muck, 0 to 2 percent slopes, rarely flooded	29.5	6.9%
Pt	Portsmouth fine sandy loam	29.7	6.9%
W	Water	11.2	2.6%
Totals for Area of Interest		**431.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit

descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Currituck County, North Carolina

BoA—Bojac loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3rnb
Elevation: 0 to 30 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bojac and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bojac

Setting

Landform: Ridges on marine terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy and sandy fluviomarine deposits

Typical profile

Ap - 0 to 8 inches: loamy fine sand
Bt - 8 to 47 inches: fine sandy loam
C - 47 to 85 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F153BY030NC - Dry Loamy Rises and Flats
Hydric soil rating: No

Minor Components

Conetoe

Percent of map unit: 4 percent
Landform: Ridges on stream terraces, ridges on marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest

Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F153BY030NC - Dry Loamy Rises and Flats
Hydric soil rating: No

Seabrook

Percent of map unit: 3 percent
Landform: Depressions on marine terraces
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F153BY020NC - Moist Sands
Hydric soil rating: No

Munden

Percent of map unit: 3 percent
Landform: Marine terraces
Down-slope shape: Linear
Across-slope shape: Convex
Ecological site: F153BY040NC - Moist Loamy Rises and Flats
Hydric soil rating: No

Bp—Borrow pit

Map Unit Setting

National map unit symbol: 21ydy
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Pits, sand: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits, Sand

Setting

Parent material: Sandy fluviomarine deposits

Typical profile

C1 - 0 to 10 inches: sand
C2 - 10 to 80 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 39.96 in/hr)
Depth to water table: About 0 to 6 inches
Available water supply, 0 to 60 inches: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Cb—Conaby muck

Map Unit Setting

National map unit symbol: 3rnd
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Conaby, drained, and similar soils: 80 percent
Conaby, undrained, and similar soils: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conaby, Drained

Setting

Landform: Depressions, pocosins
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Woody and herbaceous organic material over sandy and loamy fluviomarine deposits

Typical profile

Oa - 0 to 13 inches: muck
A - 13 to 21 inches: sand
Bg - 21 to 33 inches: sandy loam
Cg - 33 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions

Hydric soil rating: Yes

Description of Conaby, Undrained

Setting

Landform: Depressions, pocosins
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Woody and herbaceous organic material over sandy and loamy fluviomarine deposits

Typical profile

Oa - 0 to 13 inches: muck
A - 13 to 21 inches: sand
Bg - 21 to 33 inches: sandy loam
Cg - 33 to 80 inches: sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

CnA—Conetoe loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3rnf
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Conetoe and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Conetoe

Setting

Landform: Ridges on stream terraces, ridges on marine terraces
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

Ap - 0 to 8 inches: loamy sand
E - 8 to 22 inches: loamy sand
Bt - 22 to 40 inches: sandy loam
BC - 40 to 46 inches: loamy sand
C - 46 to 80 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F153AY030NC - Dry Loamy Rises and Flats, F153BY030NC - Dry Loamy Rises and Flats
Hydric soil rating: No

Minor Components

Leon

Percent of map unit: 5 percent
Landform: Flats on marine terraces
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F153BY070NC - Wet Spodosol Flats and Depressions, F153AY070NC - Wet Spodosol Flats and Depressions
Hydric soil rating: Yes

Cu—Currituck mucky peat

Map Unit Setting

National map unit symbol: 3rnj
Elevation: 0 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Not prime farmland

Map Unit Composition

Currituck, tidal, and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Currituck, Tidal

Setting

Landform: Tidal marshes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Herbaceous organic material over sandy fluviomarine deposits

Typical profile

Oe - 0 to 14 inches: mucky peat
Oa - 14 to 28 inches: muck
Cg - 28 to 80 inches: sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Very frequent
Frequency of ponding: None
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 10.0
Available water supply, 0 to 60 inches: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: A/D
Ecological site: R153BY140NC - Tidal Marsh on Organic Soil
Hydric soil rating: Yes

Ds—Dragston loamy fine sand

Map Unit Setting

National map unit symbol: 3rnm
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Dragston, drained, and similar soils: 45 percent
Dragston, undrained, and similar soils: 40 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dragston, Drained

Setting

Landform: Marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand
E - 6 to 10 inches: loamy fine sand
Bt - 10 to 42 inches: sandy loam
2Cg - 42 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A/D
Ecological site: F153AY040NC - Moist Loamy Rises and Flats, F153BY040NC - Moist Loamy Rises and Flats
Hydric soil rating: No

Description of Dragston, Undrained

Setting

Landform: Marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 6 inches: loamy fine sand
E - 6 to 10 inches: loamy fine sand
Bt - 10 to 42 inches: sandy loam
2Cg - 42 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 12 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Ecological site: F153AY040NC - Moist Loamy Rises and Flats, F153BY040NC - Moist Loamy Rises and Flats
Hydric soil rating: No

Minor Components

Portsmouth, undrained

Percent of map unit: 3 percent
Landform: Depressions on marine terraces, flats on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F153AY060NC - Wet Loamy Flats and Depressions, F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Nimmo, undrained

Percent of map unit: 2 percent
Landform: Flats on marine terraces, depressions on marine terraces
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions, F153AY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Mu—Munden loamy sand

Map Unit Setting

National map unit symbol: 3rnr
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Munden and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Munden

Setting

Landform: Ridges on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

A - 0 to 9 inches: loamy sand
Bt - 9 to 37 inches: fine sandy loam
C - 37 to 72 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Ecological site: F153BY040NC - Moist Loamy Rises and Flats
Hydric soil rating: No

Minor Components

Nimmo, undrained

Percent of map unit: 5 percent
Landform: Flats on marine terraces, depressions on marine terraces
Down-slope shape: Concave
Across-slope shape: Linear
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Po—Ponzer muck, 0 to 2 percent slopes, rarely flooded

Map Unit Setting

National map unit symbol: 2v9nw
Elevation: 0 to 30 feet
Mean annual precipitation: 45 to 60 inches
Mean annual air temperature: 60 to 61 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Ponzer, undrained, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ponzer, Undrained

Setting

Landform: Flats, depressions
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Herbaceous organic material and/or woody organic material over loamy marine deposits

Typical profile

Oa - 0 to 32 inches: muck
Cg - 32 to 63 inches: loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very high (about 19.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D
Ecological site: F153BY080NC - Wet Organic Soil Flats and Depressions
Hydric soil rating: Yes

Minor Components

Belhaven, undrained

Percent of map unit: 6 percent
Landform: Flats, depressions, pocosins, flood plains
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: F153BY080NC - Wet Organic Soil Flats and Depressions
Hydric soil rating: Yes

Roper, undrained

Percent of map unit: 4 percent
Landform: Depressions on marine terraces, flats on marine terraces
Landform position (three-dimensional): Talf
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: F153BY065NC - Wet Clay Flats and Depressions
Hydric soil rating: Yes

Pt—Portsmouth fine sandy loam

Map Unit Setting

National map unit symbol: 3rp0
Elevation: 0 to 30 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Portsmouth, drained, and similar soils: 75 percent
Portsmouth, undrained, and similar soils: 10 percent
Minor components: 7 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Portsmouth, Drained

Setting

Landform: Flats on marine terraces, depressions on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits over sandy fluviomarine deposits

Typical profile

Ap - 0 to 12 inches: fine sandy loam
Eg - 12 to 19 inches: fine sandy loam
Btg - 19 to 35 inches: sandy clay loam
BCg - 35 to 38 inches: sandy loam
2Cg - 38 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Description of Portsmouth, Undrained

Setting

Landform: Depressions on marine terraces, flats on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy fluviomarine deposits over sandy fluviomarine deposits

Typical profile

A - 0 to 12 inches: fine sandy loam
Eg - 12 to 19 inches: fine sandy loam
Btg - 19 to 35 inches: sandy clay loam
BCg - 35 to 38 inches: sandy loam
2Cg - 38 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Very poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B/D
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

Minor Components

Cape lookout, undrained
Percent of map unit: 4 percent
Landform: Depressions, pocosins, flats
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: F153BY065NC - Wet Clay Flats and Depressions
Hydric soil rating: Yes

Portsmouth, undrained
Percent of map unit: 3 percent
Landform: Depressions on marine terraces, flats on marine terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: F153BY060NC - Wet Loamy Flats and Depressions
Hydric soil rating: Yes

W—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

Hydrograph Report

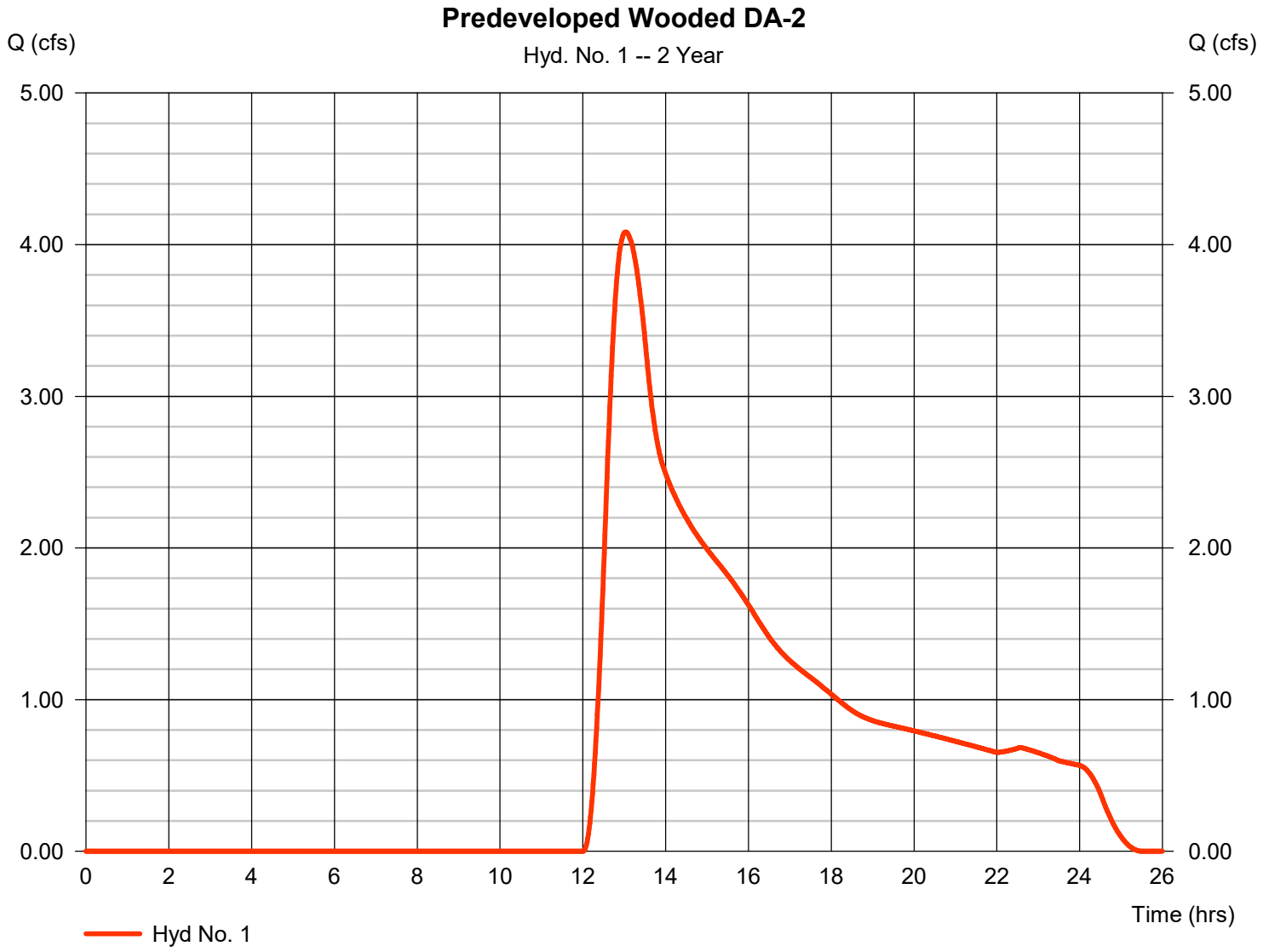
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 — Tuesday, 08 / 30 / 2016

Hyd. No. 1

Predeveloped Wooded DA-2

Hydrograph type	= SCS Runoff	Peak discharge	= 4.083 cfs
Storm frequency	= 2 yrs	Time to peak	= 13.03 hrs
Time interval	= 1 min	Hyd. volume	= 60,284 cuft
Drainage area	= 54.440 ac	Curve number	= 52*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 56.40 min
Total precip.	= 3.68 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(15.490 x 30) + (27.860 x 55) + (11.090 x 77)] / 54.440



Hydrograph Report

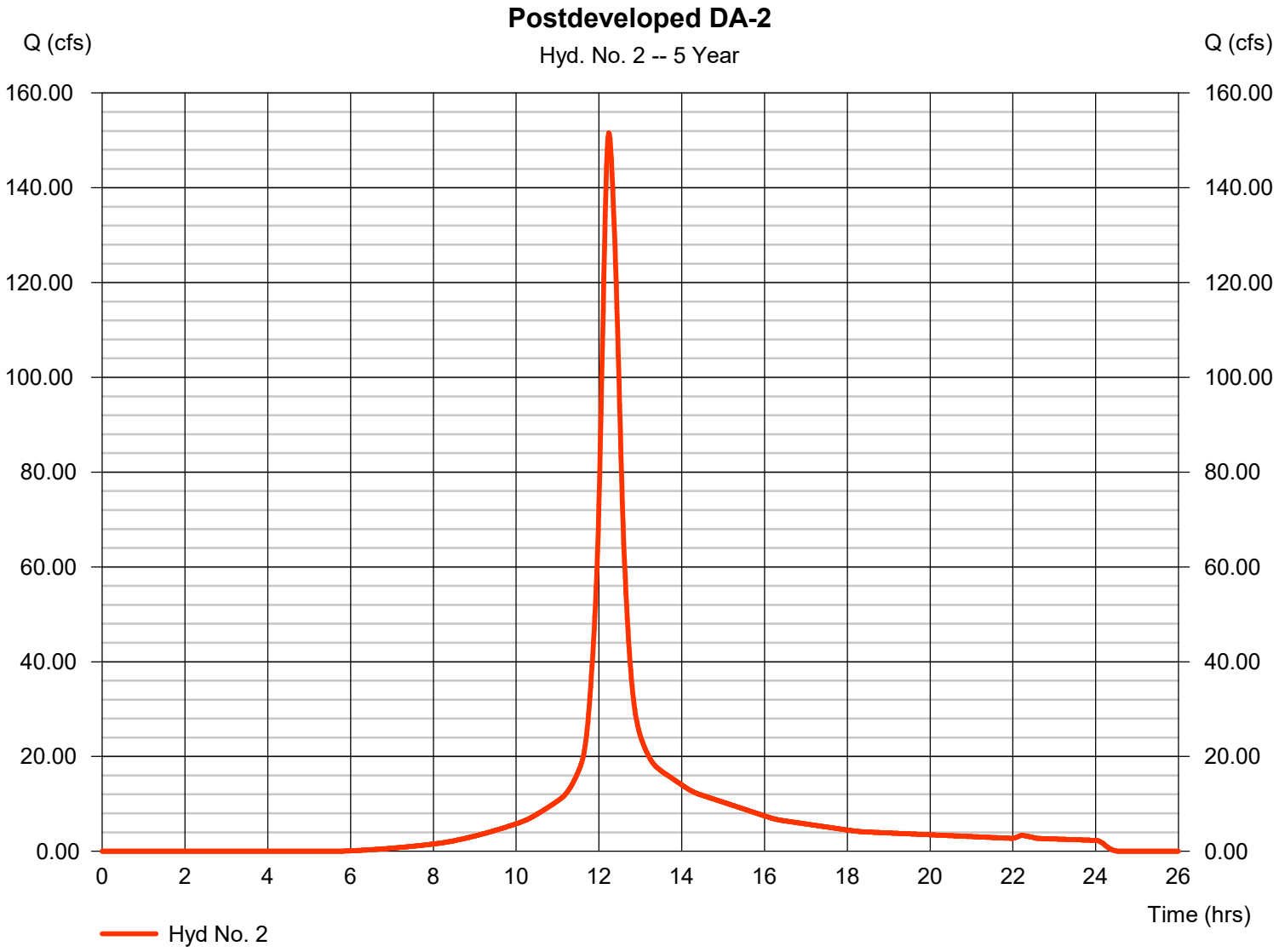
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2016 by Autodesk, Inc. v10.5 Tuesday, 08 / 30 / 2016

Hyd. No. 2

Postdeveloped DA-2

Hydrograph type	= SCS Runoff	Peak discharge	= 151.58 cfs
Storm frequency	= 5 yrs	Time to peak	= 12.23 hrs
Time interval	= 1 min	Hyd. volume	= 701,173 cuft
Drainage area	= 54.450 ac	Curve number	= 86*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 21.70 min
Total precip.	= 5.05 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(32.910 x 98) + (5.360 x 49) + (5.810 x 84) + (10.370 x 69)] / 54.450



P15004 - OBX Waterpark Adventure - Stormwater Storage Summary

Area A - Basin for Waterpark				
Elev	Area (sf)	Avg area (sf)	Volume (cf)	Cum Vol. (cf)
6.00	25,784.21			0.00
		27,301.44	27,301.44	
7.00	28,818.68			27,301.44
		30,403.31	30,403.31	
8.00	31,987.94			57,704.75
		33,639.96	33,639.96	
9.00	35,291.99			91,344.71
		37,011.41	37,011.41	
10.00	38,730.83			128,356.12
		39,615.81	19,807.91	
10.50	40,500.80			**148,164.03**

Area B - Parking Lot Storage West				
Elev	Area (sf)	Avg area (sf)	Volume (cf)	Cum Vol. (cf)
7.00	5,376.90			0.00
		10,686.70	10,686.70	
8.00	15,996.49			**10,686.70**

Area C - Parking Lot Storage Middle				
Elev	Area (sf)	Avg area (sf)	Volume (cf)	Cum Vol. (cf)
8.00	674.49			0.00
		3,162.29	3,162.29	
9.00	5,650.10			3,162.29
		11,056.29	11,056.29	
10.00	16,462.48			**14,218.58**

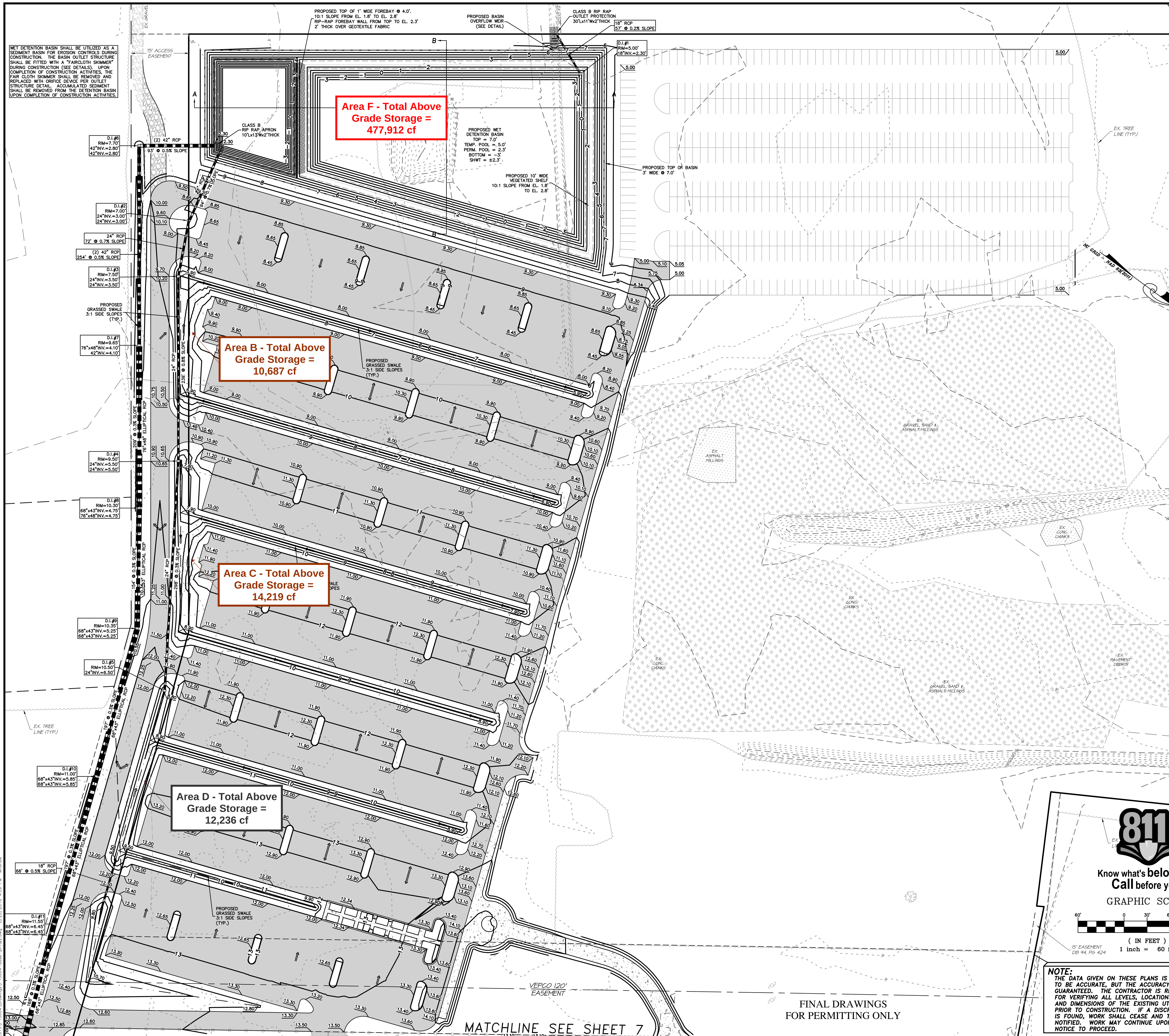
Area D - Parking Lot Storage East				
Elev	Area (sf)	Avg area (sf)	Volume (cf)	Cum Vol. (cf)
9.00	407.63			0.00
		2,841.87	2,841.87	
10.00	5,276.12			2,841.87
		9,393.99	9,393.99	
11.00	13,511.86			**12,235.87**

Area E - Southeast Corner of Parking Lot				
Elev	Area (sf)	Avg area (sf)	Volume (cf)	Cum Vol. (cf)
10.00	24.84			0.00
		539.65	539.65	
11.00	1,054.46			539.65
		2,937.97	2,937.97	
12.00	4,821.49			**3,477.62**

Area F - Wet Detention Basin (Including Forebay)				
Elev	Area (sf)	Avg area (sf)	Volume (cf)	Cum Vol. (cf)
2.30	86,066.64			0.00
		90,357.20	63,250.04	
3.00	94,647.76			63,250.04
		96,963.18	96,963.18	
4.00	99,278.59			160,213.22
		101,500.78	101,500.78	
5.00	103,722.97			**261,714.00**
		105,901.98	105,901.98	
6.00	108,081.00			**367,615.98**
		110,296.00	110,296.00	
7.00	112,511.00			**477,911.98**

Volume in Elliptical Pipes=	16,761.25 cf
Volume in Circular Pipes =	13,073.66 cf

Total Storage Volume =	696,530 cf



NOTES:

1. CURRENT OWNERS:

GB INVESTMENT GROUP, LLC 345 JARVISBURG RD JARVISBURG, NC 27947	PIN# / PID#: 9837-54-8094 / 0124000137L0000 SITE ADDRESS: 8526 CARATOKE HWY ZONED: CONDITIONAL GENERAL BUSINESS (C-GB)
BARNHILL CONTRACTING CO PO BOX 7948 ROCKY MOUNT, NC 27804	PIN# / PID#: 9837-74-0821 / 0124000137E0000 SITE ADDRESS: 8504 CARATOKE HWY ZONED: HEAVY INDUSTRIAL (HI)
GEORGE M. FARROW PO BOX 253 GRANDY, NC 27939	PIN# / PID#: 9837-74-2398 / 012400001270000 SITE ADDRESS: 8524 CARATOKE HWY ZONED: GENERAL BUSINESS (GB)

2. APPLICANT / SITE CONTACT: OBX WATERPARK ADVENTURE, LLC
518-783-0038
AQUATIC GROUP.COM

3. TOTAL PARCEL AREA = 3,539,726.79 SF / 81.26 AC
GBIG PARCEL = 3,484,800.00 SF / 80.00 AC
UPLANDS = 3,410,729.05 SF / 78.30 AC
WETLANDS = 74,070.95 SF / 1.70 AC
BARNHILL PARCEL = 34,946.87 SF / 0.80 AC
FARROW PARCEL = 19,979.92 SF / 0.46 AC

4. LOT COVERAGE PHASE 1
EXISTING IMPERVIOUS AREA = 780,031 SF (22.38%)

EXISTING AFTER DEMO = 322,896 SF
PROPOSED ASPHALT/CONCRETE = 423,878 SF
TOTAL LOT COVERAGE = 746,774 SF (21.43%) 65% ALLOWED

PROPOSED COVERAGE WITHIN BITTERSWEET 75' EASEMENT = 22,329 SF
PROPOSED COVERAGE WITHIN GRIGGS 75' EASEMENT = 6,897 SF

5. STORMWATER CALCULATIONS:
STORAGE PROVIDED = 256,724 cf
STORAGE REQUIRED BY STATE (1.5") = 134,447 cf

6. BOUNDARY INFORMATION SHOWN BASED ON PC "O", SL 84.

7. TOPOGRAPHIC INFORMATION SHOWN BASED ON FIELD SURVEYS BY QUIBLE & ASSOCIATES, PC, DATED 04/2016-08/2016.

8. HORIZONTAL DATUM IS NAD 83(2011), VERTICAL DATUM IS NAVD 88.

9. PROPERTY IS LOCATED IN NFIP FLOOD ZONES AS SHOWN AND SUBJECT TO CHANGES. BASED ON COMMUNITY CID NO. 370078; PANEL 9837; SUFFIX J. (MAP NUMBER 3720983700J) EFFECTIVE DATE: 12/16/2005

10. CONTRACTOR SHALL PROVIDE SMOOTH TRANSITION BETWEEN SPOT ELEVATION GRADES AND MAINTAIN POSITIVE DRAINAGE.

11. AREAS OF FILL SHALL BE EXCAVATED TO COMPACTED SUBGRADE AND BACKFILLED IN 6" LIFTS.

12. ALL REINFORCED CONCRETE PIPES (RCP) TO HAVE END TREATMENTS, EITHER FLARED END SECTIONS (FES) OR END WALLS. END WALLS TO BE CONSTRUCTED AS PER NCDOT STANDARD 838.01.

Certificate

22 The major stormwater plan shall contain the following certificate:

I, Chris Hewison, owner/agent hereby certify the information included on this and attached pages is true and correct to the best of my knowledge.

On the plan entitled ADG Waterpark Adventure, stormwater drainage improvements shall be installed according to these plans and specifications and approved by Currituck County. Yearly inspections are required as part of the stormwater plan. The owner is responsible for all maintenance required. Currituck County assumes no responsibility for the design, maintenance, or performance of the stormwater improvements.

Date: 7/22/16 Owner/Agent: [signature]

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Know what's below. Call before you dig.

GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

NOTE: THE DATA GIVEN ON THESE PLANS IS BELIEVED TO BE ACCURATE, BUT THE ACCURACY IS NOT GUARANTEED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL LEVELS, LOCATIONS, TYPES, AND DIMENSIONS OF THE EXISTING UTILITIES PRIOR TO CONSTRUCTION. IF A DISCREPANCY IS FOUND, WORK SHALL CEASE AND THE ENGINEER NOTIFIED. WORK MAY CONTINUE UPON ENGINEERS NOTICE TO PROCEED.

LEGEND

Existing	Proposed
EXISTING ASPHALT PAVEMENT	PROPOSED ASPHALT PAVEMENT
EX. TELEPHONE PEDESTAL	PROPOSED CONCRETE PAVEMENT
EX. CABLE TV BOX	PROPOSED DROP INLET
EX. UTILITY POLE	PROPOSED STORM PIPE
EX. DRAINAGE PIPE	PROPOSED ROOF DRAIN
EX. UG GAS LINE	PROPOSED SWALE
EX. WATER LINE	PROPOSED DRAINAGE FLOW
EX. SANITARY SEWER LINE	PROPOSED CONTOUR
EXISTING CONTOUR	PROPOSED SPOT GRADE (TOP OF ASPHALT & FLOW LINE) (UNLESS OTHERWISE NOTED)

Quible & Associates, P.C. SINCE 1959
ENGINEERING * CONSULTING * PLANNING
ENVIRONMENTAL SCIENCES * SURVEYING
NC License#: C-0208
PO Drawer 870, Kitty Hawk, NC 27949
Phone: (252) 491-8147 Fax: (252) 491-8146
E-Mail: administrator@quible.com

PRELIMINARY NOT FOR CONSTRUCTION
NORTH CAROLINA PROFESSIONAL SEAL 043652 ENGINEER CATHLEEN M. SAUNDERS
CERTIFICATION

NO.	DATE	REVISIONS
1	07/20/16	REVISIONS FOR NCDEQ EROSION CONTROL SUBMITTAL
2	07/22/16	REVISIONS FOR CURRITUCK COUNTY SUBMITTAL
3	08/08/16	REVISIONS AS PER NCDEQ EROSION CONTROL COMMENTS
4	08/22/16	ADDED PARK GRADING & UTILITIES FOR BID DOCUMENTS
5	08/25/16	REVISIONS FOR CURRITUCK COUNTY SUBMITTAL
6	08/26/16	REVISIONS FOR BID DOCUMENTS

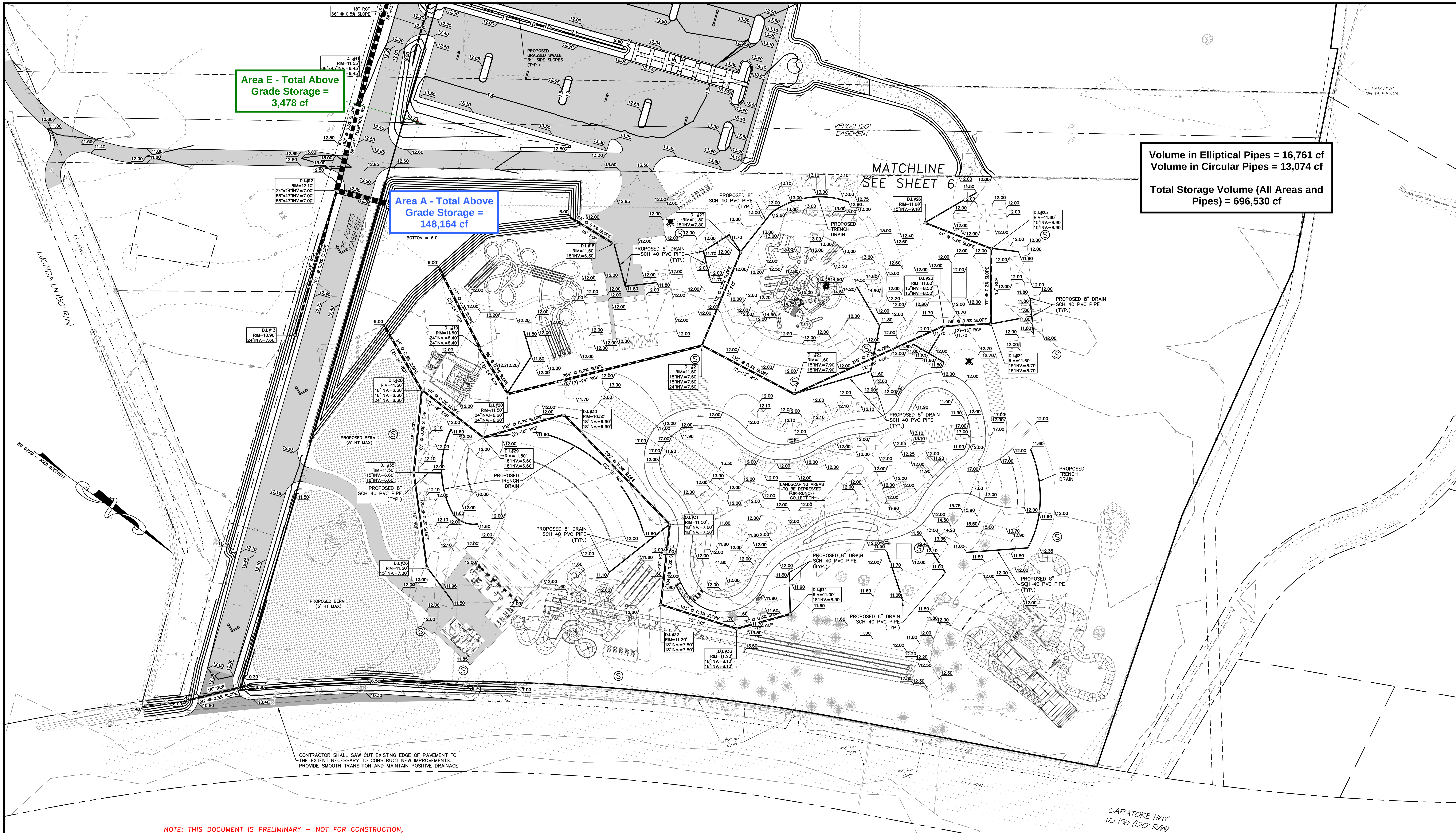
GRADING & DRAINAGE PLAN - PH. 1

OBX WATERPARK ADVENTURE
OBX WATERPARK ADVENTURE, LLC

POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

COMMISSION NO.	P15004
DESIGNED BY	MWS,CMS
DRAWN BY	JMH,CMS
CHECKED BY	MWS,CMS
ISSUE DATE	07/12/16

SHEET NO. 6 OF 16 SHEETS



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811 Know what's **below.** **Call** before you dig.

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GRAPHIC SCALE
60' 0 30' 60' 120'
(IN FEET)
1 inch = 60 ft.

LEGEND

EXISTING ASPHALT PAVEMENT	PROPOSED ASPHALT PAVEMENT
EX. TELEPHONE PEDESTAL	PROPOSED CONCRETE PAVEMENT
EX. CABLE TV BOX	PROPOSED DROP INLET
EX. UTILITY POLE	PROPOSED STORM PIPE
EX. DRAINAGE PIPE	PROPOSED ROOF DRAIN
EX. UG GAS LINE	PROPOSED SWALE
EX. WATER LINE	PROPOSED DRAINAGE FLOW
EX. SANITARY SEWER LINE	9.0 PROPOSED CONTOUR
EXISTING CONTOUR	9.0 PROPOSED SPOT GRADE (TOP OF ASPHALT & FLOW LINE) (UNLESS OTHERWISE NOTED)

Quible & Associates, P.C. SINCE 1959
ENGINEERING • CONSULTING • PLANNING
ENVIRONMENTAL SCIENCES • SURVEYING
NC License #: C-0208
PO Drawer 870, Kitty Hawk, NC 27949
Phone: (252) 491-8147 Fax: (252) 491-8146
E-Mail: administrator@quible.com

PRELIMINARY NOT FOR CONSTRUCTION
CERTIFICATION

REVISIONS

NO.	DATE	REVISIONS
1	07/20/16	REVISIONS FOR NCDEQ EROSION CONTROL SUBMITTAL
2	07/22/16	REVISIONS FOR CURRITUCK COUNTY SUBMITTAL
3	08/08/16	REVISIONS AS PER NCDEQ EROSION CONTROL COMMENTS
4	08/22/16	ADDED PARK GRADING & UTILITIES FOR BID DOCUMENTS
5	08/25/16	REVISIONS FOR CURRITUCK COUNTY SUBMITTAL
6	08/26/16	REVISIONS FOR BID DOCUMENTS

GRADING & DRAINAGE PLAN - PH. 2

OBX WATERPARK ADVENTURE

OBX WATERPARK ADVENTURE, LLC
POPLAR BRANCH TOWNSHIP CURRITUCK COUNTY NORTH CAROLINA

COMMISSION NO.	P15004
DESIGNED BY	MWS,CMS
DRAWN BY	JMH,CMS
CHECKED BY	MWS,CMS
ISSUE DATE	07/12/16

SHEET NO. 7 OF 16 SHEETS