Wetland Permit Application for:
Peirce Island Pool Renovations

City of Portsmouth, NH

Prepared For:
City of Portsmouth
Department of Public Works
680 Peverly Hill Road
Portsmouth, NH 03801

and **Oak Point Associates, Inc.**
85 Middle Street
Portsmouth, NH 03801

Date:
July 26, 2022

Prepared By: **Normandeau Associates, Inc.**
25 Nashua Road
Bedford, NH 03110

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EXHIBIT 28 - FUNCTIONAL ASSESSMENT WORKSHEET

*Exhibit 3 and 6 - Planning actions and materials required by Env-Wt 311.01(a)-(c), Env-Wt 311.03(b)(3), and 311.06 are provided in various other portions of this application.

+Exhibit 24 - After-the-fact application is not applicable

EXHIBIT 1

STANDARD DREDGE AND FILL WETLAND PERMIT APPLICATION FORM

STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A/Env-Wt 100-900

APPLICANT'S NAME: **Terry Desmarais, PE, City Engineer** **TOWN NAME:** Portsmouth

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

A person may request a waiver of the requirements in Rules Env-Wt 100-900 to accommodate situations where strict adherence to the requirements would not be in the best interest of the public or the environment but is still in compliance with RSA 482-A. A person may also request a waiver of the standards for existing dwellings over water pursuant to RSA 482-A:26, III(b). For more information, please consult the Waiver Request Form.

SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2))

Please use the Wetland Permit Planning Tool (WPPT), the Natural Heritage Bureau (NHB) DataCheck Tool, the Aquatic Restoration Mapper, or other sources to assist in identifying key features such as: priority resource areas (PRAs), protected species or habitats, coastal areas, designated rivers, or designated prime wetlands.

Has the required planning been completed?	☒ Yes ☐ No
Does the property contain a PRA? If yes, provide the following information:	☒ Yes ☐ No
• Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&G) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04.	☐ Yes ☒ No
• Protected species or habitat? ○ If yes, species or habitat name(s): Iva frutescens ○ NHB Project ID #: NHB21-1136	☒ Yes ☐ No
• Bog?	☐ Yes ☒ No
• Floodplain wetland contiguous to a tier 3 or higher watercourse?	☐ Yes ☒ No
• Designated prime wetland or duly-established 100-foot buffer?	☐ Yes ☒ No
• Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone?	☒ Yes ☐ No
Is the property within a Designated River corridor? If yes, provide the following information: • Name of Local River Management Advisory Committee (LAC): • A copy of the application was sent to the LAC on Month: Day: Year:	☐ Yes ☒ No

For dredging projects, is the subject property contaminated? • If yes, list contaminant:	☐ Yes ☒ No
Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	☐ Yes ☒ No
For stream crossing projects, provide watershed size (see WPPT or Stream Stats): N/A	

SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))

Provide a **brief** description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached"; please use the space provided below.

The City of Portsmouth is proposing a renovation of the Peirce Island swimming pool and associated pump house on Peirce Island Road to bring a highly utilized, but deteriorated public facility up to current health and safety requirements. These renovations include replacement of the pool's existing vinyl liner, pool gutter, underground surge tank, concrete pool deck, pump house, and existing stormwater drainage system on the east side of the pool. The pump house will be relocated to a position outside of the Tidal Buffer Zone and its doorways and other exterior building wall penetrations will be elevated 2 feet above the Piscataqua River flood level to protect the building systems from potential flood events. A new stormwater drainage system will also constructed to collect runoff from the new pump house roof, adjacent walkway, and lawn area and will outlet to the Piscataqua River on the north side of the pool. The stormwater drainage system outlet will be located above the mean high water elevation and stone rip rap apron will be constructed for erosion protection at the outlet. Approximately a third of the total proposed impacts by the project will occur within the Tidal Buffer Zone (TBZ), two-thirds within the 100 to 250-foot portion of the Protected Shoreland, and a small portion of the rocky shore.

SECTION 3 - PROJECT LOCATION

Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.

ADDRESS: 99 Peirce Island Road

TOWN/CITY: Portsmouth

TAX MAP/BLOCK/LOT/UNIT: 208/1

US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: Piscataqua River
☐ N/A

(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places): 43.07435° North
-70.74551° West

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a)) If the applicant is a trust or a company, then complete with the trust or company information.		
NAME: Terry Desmarais, P.E., City Engineer		
MAILING ADDRESS: 680 Peverly Hill Road		
TOWN/CITY: Portsmouth	STATE: NH	ZIP CODE: 03801
EMAIL ADDRESS: tldesmarais@cityofportsmouth.com		
FAX: N/A	PHONE: (603) 766-1421	
ELECTRONIC COMMUNICATION: By initialing here: ____, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c)) ☐ N/A		
LAST NAME, FIRST NAME, M.I.: Wade Lippert, PE		
COMPANY NAME: Oak Point Associates		
MAILING ADDRESS: 85 Middle Street		
TOWN/CITY: Portsmouth	STATE: NH	ZIP CODE: 03801
EMAIL ADDRESS: wlippert@oakpoint.com		
FAX:	PHONE: 207-283-0193	
ELECTRONIC COMMUNICATION: By initialing here ____, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b)) If the owner is a trust or a company, then complete with the trust or company information. ☐ Same as applicant		
NAME: City of Portsmouth		
MAILING ADDRESS: 97 Junkins Avenue		
TOWN/CITY: Portsmouth	STATE: NH	ZIP CODE: 03801
EMAIL ADDRESS: N/A		
FAX: N/A	PHONE: N/A	
ELECTRONIC COMMUNICATION: By initialing here ____, I hereby authorize NHDES to communicate all matters relative to this application electronically.		

SECTION 7 - RESOURCE-SPECIFIC CRITERIA ESTABLISHED IN Env-Wt 400, Env-Wt 500, Env-Wt 600, Env-Wt 700, OR Env-Wt 900 HAVE BEEN MET (Env-Wt 313.01(a)(3))

Describe how the resource-specific criteria have been met for each chapter listed above (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters):
Peirce Island is located in the City of Portsmouth on the Piscataqua River. It is owned by the City and the State of NH, and provides multiple public services, including the waste water treatment facility (WWTF), the State Fish Pier, and a public outdoor pool, boat ramp, park, and numerous walking trails. The Project Area occupies the existing public outdoor pool footprint and immediate adjacent areas including previously developed lawn, public walking trail, and parking area and a portion of the rocky shore north of the pool. The Project Area is bordered by estuarine habitats, including rocky shore (E2RS1/2) and salt marsh (E2EM1). The work will occur primarily within the 100-foot TBZ and protected shoreline, although a new stormwater drainage outlet installation lies within the rocky shore off the north side of the public outdoor pool. There is a small freshwater wetland off the northwest corner of the Project Area but no impact to this wetland is anticipated. A protected plant, Iva frutescens, occurs on Peirce Island but none is present within the vicinity of the Project Area. Please see Exhibit 25 - Coastal Resource Worksheet attached to this application for futher discussion of the areas coastal resources. Please see Exhibit 8 - Permittee Responsible Mitigation Project worksheet attached to this application for the proposed mitigation for the planned permanent impacts to the rocky shore.

SECTION 8 - AVOIDANCE AND MINIMIZATION

Impacts within wetland jurisdiction must be avoided to the maximum extent practicable (Env-Wt 313.03(a)).* Any project with unavoidable jurisdictional impacts must then be minimized as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization and the Wetlands Permitting: Avoidance, Minimization and Mitigation Fact Sheet. For minor or major projects, a functional assessment of all wetlands on the project site is required (Env-Wt 311.03(b)(10)).*

Please refer to the application checklist to ensure you have attached all documents related to avoidance and minimization, as well as functional assessment (where applicable). Use the Avoidance and Minimization Checklist, the Avoidance and Minimization Narrative, or your own avoidance and minimization narrative.

**See Env-Wt 311.03(b)(6) and Env-Wt 311.03(b)(10) for shoreline structure exemptions.*

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

If unavoidable jurisdictional impacts require mitigation, a mitigation pre-application meeting must occur at least 30 days but not more than 90 days prior to submitting this Standard Dredge and Fill Permit Application.

Mitigation Pre-Application Meeting Date: Month: Day: Year:

(☐ N/A - Mitigation is not required)

SECTION 10 - THE PROJECT MEETS COMPENSATORY MITIGATION REQUIREMENTS (Env-Wt 313.01(a)(1)c)

Confirm that you have submitted a compensatory mitigation proposal that meets the requirements of Env-Wt 800 for all permanent unavoidable impacts that will remain after avoidance and minimization techniques have been exercised to the maximum extent practicable: ☐ I confirm submittal.

(☐ N/A – Compensatory mitigation is not required)

SECTION 11 - IMPACT AREA (Env-Wt 311.04(g))

For each jurisdictional area that will be/has been impacted, provide square feet (SF) and, if applicable, linear feet (LF) of impact, and note whether the impact is after-the-fact (ATF; i.e., work was started or completed without a permit).

For intermittent and ephemeral streams, the linear footage of impact is measured along the thread of the channel. *Please note, installation of a stream crossing in an ephemeral stream may be undertaken without a permit per Rule Env-Wt 309.02(d), however other dredge or fill impacts should be included below.*

For perennial streams/rivers, the linear footage of impact is calculated by summing the lengths of disturbances to the channel and banks.

Permanent impacts are impacts that will remain after the project is complete (e.g., changes in grade or surface materials).

Temporary impacts are impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.

JURISDICTIONAL AREA		PERMANENT			TEMPORARY		
		SF	LF	ATF	SF	LF	ATF
Wetlands	Forested Wetland	0		☐	0		☐
	Scrub-shrub Wetland	0		☐	0		☐
	Emergent Wetland	0		☐	0		☐
	Wet Meadow	0		☐	0		☐
	Vernal Pool	0		☐	0		☐
	Designated Prime Wetland	0		☐	0		☐
	Duly-established 100-foot Prime Wetland Buffer	0		☐	0		☐
Surface Water	Intermittent / Ephemeral Stream	0	0	☐	0	0	☐
	Perennial Stream or River	0	0	☐	0	0	☐
	Lake / Pond	0	0	☐	0	0	☐
	Docking - Lake / Pond	0	0	☐	0	0	☐
	Docking - River	0	0	☐	0	0	☐
Banks	Bank - Intermittent Stream	0	0	☐	0	0	☐
	Bank - Perennial Stream / River	0	0	☐	0	0	☐
	Bank / Shoreline - Lake / Pond	0	0	☐	0	0	☐
Tidal	Tidal Waters	125	0	☐	0	0	☐
	Tidal Marsh	0	0	☐	0	0	☐
	Sand Dune	0		☐	0		☐
	Undeveloped Tidal Buffer Zone (TBZ)	0		☐	0		☐
	Previously-developed TBZ	1,443		☐	9,200		☐
	Docking - Tidal Water	0		☐	0		☐
TOTAL		1,568	0		**9,200**	**0**	

SECTION 12 - APPLICATION FEE (RSA 482-A:3, I)

☐ **MINIMUM IMPACT FEE**: Flat fee of $400.

☐ **NON-ENFORCEMENT RELATED, PUBLICLY-FUNDED AND SUPERVISED RESTORATION PROJECTS, REGARDLESS OF IMPACT CLASSIFICATION:** Flat fee of $400 (refer to RSA 482-A:3, 1(c) for restrictions).

☒ **MINOR OR MAJOR IMPACT FEE:** Calculate using the table below:

Permanent and temporary (non-docking):	10,768 SF	×	$0.40 =	$ 4307.20
Seasonal docking structure:	0 SF	×	$2.00 =	$ 0
Permanent docking structure:	0 SF	×	$4.00 =	$ 0
Projects proposing shoreline structures (including docks) add $400 =				$ 0
			Total =	$ 4307.20

The application fee for minor or major impact is the above calculated total or $400, whichever is greater =	$ 4307.20

SECTION 13 - PROJECT CLASSIFICATION (Env-Wt 306.05)

Indicate the project classification.

☐ Minimum Impact Project	☐ Minor Project	☒ Major Project

SECTION 14 - REQUIRED CERTIFICATIONS (Env-Wt 311.11)

Initial each box below to certify:

Initials:	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials:	The information submitted on or with the application is true, complete, and not misleading to the best of the signer's knowledge and belief.
Initials:	The signer understands that: • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: 1. Deny the application. 2. Revoke any approval that is granted based on the information. 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. • The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. • The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact forestry SPN projects and minimum impact trail projects, where the signature shall authorize only the Department to inspect the site pursuant to RSA 482-A:6, II.
Initials:	If the applicant is not the owner of the property, each property owner signature shall constitute certification by the signer that he or she is aware of the application being filed and does not object to the filing.

SECTION 15 - REQUIRED SIGNATURES (Env-Wt 311.04(d); Env-Wt 311.11)

SIGNATURE (OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY:	DATE:

SECTION 16 - TOWN / CITY CLERK SIGNATURE (Env-Wt 311.04(f))

As required by RSA 482-A:3, I(a)(1), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

TOWN/CITY CLERK SIGNATURE:	PRINT NAME LEGIBLY:

TOWN/CITY:	DATE:

DIRECTIONS FOR TOWN/CITY CLERK:
Per RSA 482-A:3, I(a)(1)

1. IMMEDIATELY sign the original application form and four copies in the signature space provided above.
2. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
3. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board.
4. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:
Submit the original permit application form bearing the signature of the Town/City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery at the address at the bottom of this page. Make check or money order payable to “Treasurer – State of NH”.

EXHIBIT 2

FEES/CHECK

EXHIBIT 3

Required Planning Actions
required by Env-Wt 311.01(a)-(c) and Env-Wt 311.03(b)(3)

Required Planning Actions

All Required Planning actions required by Env-Wt 311.01(a)-(c) and Env-Wt 311.03(b)(3) have been done. See results in Exhibits 4 and 19.

EXHIBIT 4

USACE APPENDIX B – NH GENERAL PERMITS REQUIRED INFORMATION AND CORPS SECONDARY IMPACTS CHECKLIST

US Army Corps of Engineers®
New England District

Appendix B

New Hampshire General Permits (GPs)
Required Information and Corps Secondary Impacts Checklist

In order for the Corps of Engineers to properly evaluate your application, applicants must submit the following information along with the New Hampshire DES Wetlands Bureau application or permit notification forms. Some projects may require more information. For a more comprehensive checklist, go to https://www.nae.usace.army.mil/Missions/Regulatory/ "Useful Documents, Forms and Publications" and then "Corps Application Form and Guidance." Check with the Corps at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the State of New Hampshire DES Wetlands Bureau application and Permit by Notification forms.

All Projects:

- New Hampshire Department of Environmental Services (DES) Wetlands Permit Application.
- Request for Project Review Form by the New Hampshire Division of Historical Resources (DHR) https://www.nh.gov/nhdhr/review/rpr.htm.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible plans no larger than 11"x17" with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show mean low water (MLW) and mean high water (MHW) elevations. Show the high tide line (HTL) elevations when fill is involved. In other waters, show ordinary high water (OHW) elevation.
- On each plan, show the following for the project:
    - Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. In coastal waters this may be mean higher high water (MHHW), mean high water (MHW), mean low water (MLW), mean lower low water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001.
    - Horizontal state plane coordinates in U.S. survey feet based on the Traverse Mercator Grid system for the State of New Hampshire (Zone 2800) NAD 83.
    - Project limits with existing and proposed conditions.
    - Limits of any Federal Navigation Project in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the Federal Navigation Project;
    - Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the OHW in inland waters and below the HTL in coastal waters.
    - Delineation of all waterways and wetlands on the project site,:
- Use Federal delineation methods and include Corps wetland delineation data sheets (GC 2).
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact the Corps for guidance.

US Army Corps of Engineers ®
New England District

New Hampshire General Permits (GPs)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See GC 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*	X	
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	X	
2.2 Are there proposed impacts to SAS, special wetlands. Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www2.des.state.nh.us/nhb_datacheck/. The book Natural Community Systems of New Hampshire also contains specific information about the natural communities found in NH.		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?		N/A
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		X
2.5 The overall project site is more than 40 acres?		X
2.6 What is the area of the previously filled wetlands?	0	
2.7 What is the area of the proposed fill in wetlands?	0	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?	0	
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/ USFWS IPAC website: https://ecos.fws.gov/ipac/location/index	X	

3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: https://wildlife.state.nh.us/wildlife/wap-high-rank.html. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.		X
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 21?		N/A
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?	X	
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		X
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review) with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document**	X	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.

Section 1.1

Peirce Island lies in the Lower Piscataqua River –South water quality assessment unit (AUID: NHEST600031001-02-02). It is listed as Severe for Aquatic Life and Swimming, and Poor for Boating and Fish Consumption. The constituents of concern are mercury, fecal coliform, enterococcus, dioxins and PCBs. While the project will result in a 1,394 sf increase of impervious service within the overall project area due to the larger size of new pump house infrastructure, a stormwater drainage system is being installed to manage runoff from the building roof, adjacent walkways and lawn area.

Section 2.1

This project is located within 200 feet of the tidal Piscataqua River. All areas to be impacted in association with replacement and upgrading of the pools systems have been previously disturbed. The shoreline directly off the north side of the pool where the new storm drainage system outlet is proposed has also been previously disturbed and may not be the original shoreline. This area may have been filled during the original 1937 +/- construction of the Peirce Island pool. The pool deck formerly extended to the top of the slope, but this portion of the deck was removed in approximately 2000 when the now existing walking trail was constructed. The shore off the north side of the pool was also disturbed to install two 30-inch intake pipes out into the river, which are now abandoned. Several trees ranging in diameter from 4 to 26 inches will be removed to construct the proposed pump house and underground surge tank, but there will be a net benefit to the river on the northern side of the pool due to the conversion of 1,222 sf of impervious surface in the tidal buffer zone to pervious grass lawn.

Section 3.1

The state listed intertidal shrub, *Iva frutescens* is present on Peirce Island. However, a survey of the project area revealed no presence of *Iva frutescens* within 100 ft of the project.

Section 3.2

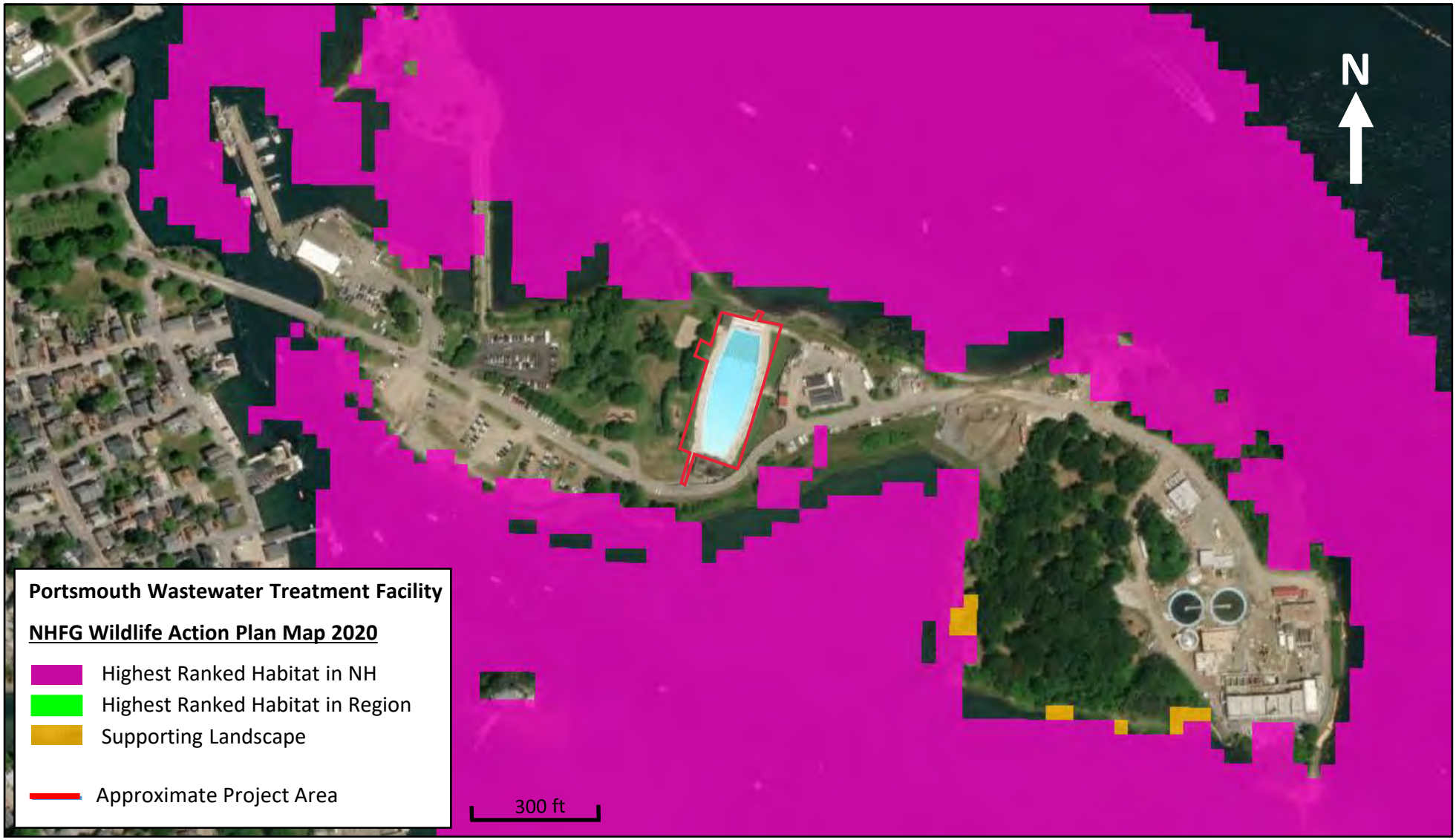
The 2020 Wildlife Action Plan map designates portions of Peirce Island and the tidal waters surrounding it as Highest Ranked Habitat in N.H., but those areas proposed to be impacted are not ranked (See attached map).

Section 4.1

While the project area is within the mapped 100-year FEMA floodplain, no net loss of flood storage is anticipated as existing elevations will be maintained.

Section 5

A Request for Project Review by the NH Division of Historical Resources (NHDHR) rhas been submitted and a response is pending. This response will be attached at the end of this Exhibit. Based on previous project work on Peirce Island, it is anticipated the review will determine no historical properties will be affected by the proposed project.


N
Portsmouth Wastewater Treatment Facility
NHFG Wildlife Action Plan Map 2020
Highest Ranked Habitat in NH
Highest Ranked Habitat in Region
Supporting Landscape
Approximate Project Area
300 ft

A Request for Project Review has been submitted to NH Department of Historical Resources as required per Section 5 of the New Hampshire General Permits (GPs) Appendix B - Corps Secondary Impacts Checklist above.

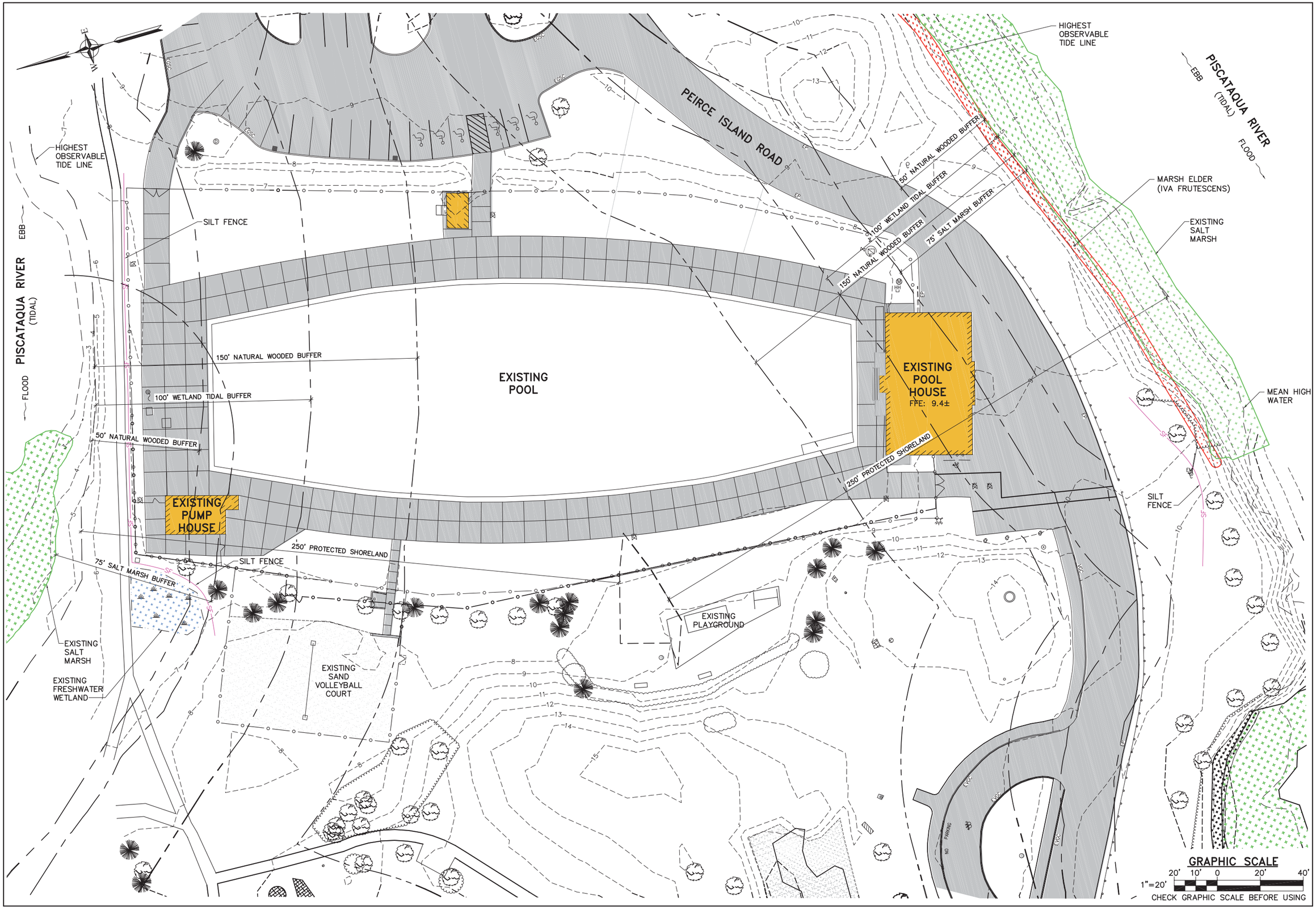
A response from the NHDHR is pending and will be inserted here when received.

EXHIBIT 5

PROJECT PLANS

Project Plans

The following submittal is for renovations to the Peirce Island Outdoor Public Pool. The following drawings are included to illustrate this project:



OAK POINT ASSOCIATES
ARCHITECTURE ■ ENGINEERING ■ PLANNING
85 Middle Street, Portsmouth, NH 03801 (T) 603.431.4849 (F) 603.431.1870
www.oakpointlnt.com

DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: WFG

PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

OVERALL SITE PLAN

SCALE: AS NOTED

DATE: 06/17/2022

DWG.:

SHEET: . OF .

CIVIL LEGEND

- EXISTING BUILDING
- EXISTING CHAIN LINK FENCE
- 62 EXISTING GRADE CONTOUR LINE
- ESD(12") EXISTING STORM DRAIN LINE (SIZE AND TYPE)
- ESS(8") EXISTING SANITARY SEWER LINE (SIZE AND TYPE)
- EUG EXISTING UNDERGROUND NATURAL GAS LINE
- EOU EXISTING OVERHEAD UTILITIES
- EOE EXISTING OVERHEAD ELECTRIC
- EUT EXISTING UNDERGROUND TELEPHONE LINE
- EW(12") EXISTING WATER LINE (SIZE AND TYPE)
- EUE EXISTING UNDERGROUND ELECTRIC LINE
- EFM EXISTING SEWER FORCE MAIN
- EXISTING UTILITY POLE WITH GUY
- EXISTING LIGHT POLE
- EXISTING CATCH BASIN
- EXISTING LANDSCAPE DRAIN
- EXISTING TREE
- B-3 EXISTING SOIL BORING LOCATION
- EXISTING SURVEY CONTROL POINT
- WV EXISTING WATER VALVE
- EXISTING WATER SHUTOFF
- EXISTING FIRE HYDRANT
- GV EXISTING GAS VALVE
- S EXISTING SEWER MANHOLE
- E EXISTING ELECTRIC MANHOLE
- EXISTING SIGN
- BUILDING LINE
- EGSC EXISTING GRANITE SLOPE CURB
- EVGC EXISTING GRANITE CURB
- EP EXISTING EDGE OF PAVEMENT
- SF SILT FENCE
- SD(12") DRAIN LINE (PIPE SIZE AS NOTED)
- UD(4") UNDERDRAIN LINE (PIPE SIZE AS NOTED)
- RD(4") ROOF DRAIN (PIPE SIZE AS NOTED)
- FM(4") SANITARY SEWER FORCE MAIN LINE (PIPE SIZE AS NOTED)
- UE(1") UNDERGROUND ELECTRIC LINE (CONDUIT SIZE AS NOTED)
- W(6") WATER LINE (PIPE SIZE AS NOTED)
- SAWCUT PAVEMENT
- 32 FINISH GRADE CONTOUR LINE
- 35.70 FINISH GRADE SPOT ELEVATION
- E ELECTRIC HANDHOLE
- SIGN
- JOINT RESTRAINT
- WV WATER VALVE
- DRAINAGE FLOW DIRECTION

CIVIL NOTES

1. VERIFY EXISTING CONDITIONS AND DIMENSIONS AND REPORT ANY DISCREPANCIES TO THE OWNER. PROCEED WITH THE WORK ONLY AFTER THE DISCREPANCY(IES) HAS(HAVE) BEEN RESOLVED BY THE OWNER.
2. THE DEPICTED LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE BASED ON RECORD DRAWINGS AND/OR FIELD SURVEY AND ARE APPROXIMATE. DETERMINE THE EXACT LOCATION OF UNDERGROUND UTILITIES PRIOR TO BEGINNING WORK. CONTACT "DIG SAFE" AT 1-888-344-7233 AND OBTAIN A "DIG SAFE" PERMIT PRIOR TO COMMENCING EXCAVATION OPERATIONS ON THE SITE.
3. PROTECT EXISTING SYSTEMS AND SURFACES TO REMAIN. DAMAGE RESULTING FROM THE CONTRACTOR'S OPERATIONS MUST BE REPAIRED OR REPLACED AS APPROVED BY THE OWNER AT NO ADDITIONAL COST TO THE OWNER.
4. PROVIDE A MINIMUM OF 6 INCHES OF PLANTING SOIL, SEED, AND MULCH FOR DISTURBED AREAS NOT OTHERWISE SPECIFIED.
5. PROVIDE A PAVEMENT SURFACE THAT IS FREE OF LOW SPOTS AND PONDING AREAS.
6. EXISTING CONDITIONS ARE BASED ON A TOPOGRAPHIC SURVEY COMPLETED BY OAK POINT ASSOCIATES DECEMBER 2018 AND JUNE 2021, CITY OF PORTMOUTH GIS MAPS, AND TOPOGRAPHIC SURVEY BY DOUCET SURVEY JULY 2013.
7. HORIZONTAL CONTROL IS BASED ON NEW HAMPSHIRE STATE PLANE COORDINATE SYSTEM, NAD83. VERTICAL CONTROL IS BASED ON NAVD88.
8. GIVEN DIMENSIONS ARE FROM FACE OF CURB, FACE OF WALL, FACE OF BUILDING AND CENTERLINE OF MARKINGS UNLESS INDICATED OR NOTED OTHERWISE.
9. GROUNDWATER CONDITIONS ARE AFFECTED BY TIDAL CONDITIONS AND FLUCTUATE. FOR DEWATERING WORK, EXCAVATION, AND OTHER ASPECTS OF THIS PROJECT, PLAN UNDER THE ASSUMPTION THAT GROUNDWATER WILL BE ENCOUNTERED AT ELEVATION 3.0 FEET. HIGHER ELEVATIONS MAY BE ENCOUNTERED DUE TO TIDAL FLUCTUATIONS AND WEATHER EVENTS. OBTAIN APPROVAL AND DRAINAGE PERMIT FROM THE OWNER FOR DEWATERING DISCHARGES TO CITY DRAINAGE SYSTEMS.
10. COORDINATE WORK ASSOCIATED WITH ELECTRIC SERVICE WITH EVERSOURCE. PROVIDE UTILITY SERVICES IN ACCORDANCE WITH UTILITY COMPANY STANDARDS AND REQUIREMENTS. PAY UTILITY FEES FOR SERVICE CONNECTION.
11. ESTABLISH AND MAINTAIN SURVEY CONTROL AND LAYOUT BY A SURVEYOR OR ENGINEER LICENSED IN THE STATE OF NEW HAMPSHIRE.
12. THE FOLLOWING PERMITS WILL BE OBTAINED BY THE OWNER TO ALLOW FOR THE COMPLETION OF WORK. ALL KNOWN CONDITIONS THAT WILL AFFECT THE CONTRACT HAVE BEEN INCLUDED IN THE SCOPE OF WORK IDENTIFIED ON THE DRAWINGS AND SPECIFICATIONS. ABIDE BY ALL CONDITIONS AND REQUIREMENTS OF EACH PERMIT.
    A. NHDES STANDARD WETLANDS PERMIT.
    B. NHDES SHORELAND PERMIT BY NOTIFICATION (PBN).
    C. CITY OF PORTSMOUTH CONSERVATION COMMISSION REVIEW.
13. MEET THE REQUIREMENTS AND INTENT OF NEW HAMPSHIRE INVASIVE SPECIES REGULATIONS (RSA 430:53 AND AGR 3800).
14. WETLAND BOUNDARIES WERE DELINEATED BY NORMANDEAU ASSOCIATES, INC. ON JUNE 25, 2021, AND WERE DETERMINED USING THE US ARMY CORPS OF ENGINEERS NORTHCENTRAL/NORTHEAST REGIONAL SUPPLEMENT (VERSION 2, JANUARY 2013) TO THE CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (1987) AND NHDES WETLAND RULES ENV-WT 101.48.
15. UTILITY PROVIDERS:
    WATER: CITY OF PORTSMOUTH
    SEWER: CITY OF PORTSMOUTH
    POWER: EVERSOURCE
    COMMUNICATIONS: BAYRING COMMUNICATIONS
16. SUBSURFACE CONDITIONS BASED ON A REPORT OF GEOTECHNICAL EVALUATION PREPARED BY R.W. GILLESPIE & ASSOCIATES, DATED MAY 5, 2022.

CIVIL ABBREVIATIONS

AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS
ABAN	ABANDONED
AC	ASBESTOS CEMENT
ADA	AMERICANS WITH DISABILITIES ACT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWG	AMERICAN WIRE GUAGE
AWWA	AMERICAN WATER WORKS ASSOCIATION
BC	BOTTOM OF CURB (AT PAVEMENT SURFACE)
BLDG	BUILDING
BMPs	BEST MANAGEMENT PRACTICES
℄	CENTERLINE
CJ	CONTROL JOINT
CONC	CONCRETE
CY	CUBIC YARD
DI	DUCTILE IRON
DIA	DIAMETER
E	EASTING
EJ	EXPANSION JOINT
ELEV	ELEVATION
EQ	EQUAL
EW	EACH WAY
EXIST	EXISTING
FD	FOUNDATION DRAIN
FFE	FINISH FLOOR ELEVATION
FHWA	FEDERAL HIGHWAY ADMINISTRATION
FT	FEET
GAL	GALLON
GALV	GALVANIZED
HORIZ	HORIZONTAL
HDPE	HIGH DENSITY POLYETHYLENE
ID	IDENTIFICATION
INV	INVERT
L	LENGTH
LB/LBS	POUND/POUNDS
LF	LINEAR FEET
MAX	MAXIMUM
MIN	MINIMUM OR MINUTE
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
N	NORTHING
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NHDES	NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES
NHDOT	NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION
NOI	NOTICE OF INTENT
NPDES	NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM
OC	ON CENTER
OD	OUTSIDE DIAMETER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PC	POINT OF CURVATURE
PE	POLYETHYLENE
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
REINF	REINFORCED
RGS	RIGID GALVANIZED STEEL
SCH	SCHEDULE
SDR	STANDARD DIMENSION RATIO
SF	SQUARE FOOT
SIM	SIMILAR
SY	SQUARE YARDS
T	THICKNESS
TBM	TEMPORARY BENCH MARK
TC	TOP OF CURB
TYP	TYPICAL
USDOT	UNITED STATES DEPARTMENT OF TRANSPORTATION
VERT	VERTICAL
W/	WITH
WWF	WELDED WIRE FABRIC

PARCEL INFORMATION

OWNER OF RECORD:
CITY OF PORTSMOUTH
PO BOX 628
PORTSMOUTH, NH 03802

PARCEL SIZE: 38.0 ACRES

CITY OF PORTSMOUTH MAP-LOT: 208-1

ZONE: MUNICIPAL (M)

DIMENSIONAL REQUIREMENTS: LOTS AND BUILDINGS IN THE MUNICIPAL DISTRICT ARE EXEMPT FROM ALL DIMENSIONAL AND INTENSITY REGULATIONS.

SUBJECT PARCEL IS LOCATED WITHIN A FEDERALLY DESIGNATED FLOOD HAZARD AREA ZONE AE (COMMUNITY PANEL NUMBER 330139 0278 F, EFFECTIVE DATE: JANUARY 29, 2021)

ABUTTERS:

PEASE DEVELOPMENT AUTHORITY
C/O PORTS FISH CO OP
ONE PIERCE ISLAND RD
PORTSMOUTH, NH 03801
LOT: 208-1A
ZONE: WATERFRONT BUSINESS (WB)

CITY OF PORTSMOUTH
PO BOX 628
PORTSMOUTH, NH 03802
LOT: 208-2
ZONE: MUNICIPAL (M)

PLAN REFERENCES

SWIMMING FACILITIES RESTORATION, JUNE 1978, BY WHITMAN AND HOWARD, INC.

PEIRCE ISLAND POOL GUTTER IMPROVEMENTS, FEBRUARY 10, 1996, BY KIMBALL CHASE.

PARKING IMPROVEMENTS PEIRCE ISLAND, NOVEMBER 4, 2000, BY OAK POINT ASSOCIATES.

EXISTING CONDITIONS SURVEY BY DOUCET SURVEY, LLC, JULY 2003.

PEIRCE ISLAND WWTF UPGRADE, NOVEMBER 2015, BY AECOM.

CITY OF PORTSMOUTH PUBLIC WORKS EXISTING CONDITIONS GIS MAP

NO.	DATE	DESCRIPTION	BY

REVISIONS

17 Jun, 2022 - 11:54am
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OAK POINT ASSOCIATES
ARCHITECTURE ■ ENGINEERING ■ PLANNING
85 Middle Street, Portsmouth, NH 03801 (T) 603.431.4849 (F) 603.431.1870
www.oakpoint.com

WADE ALLEN LIPPERT No. 13331 PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 6/17/22

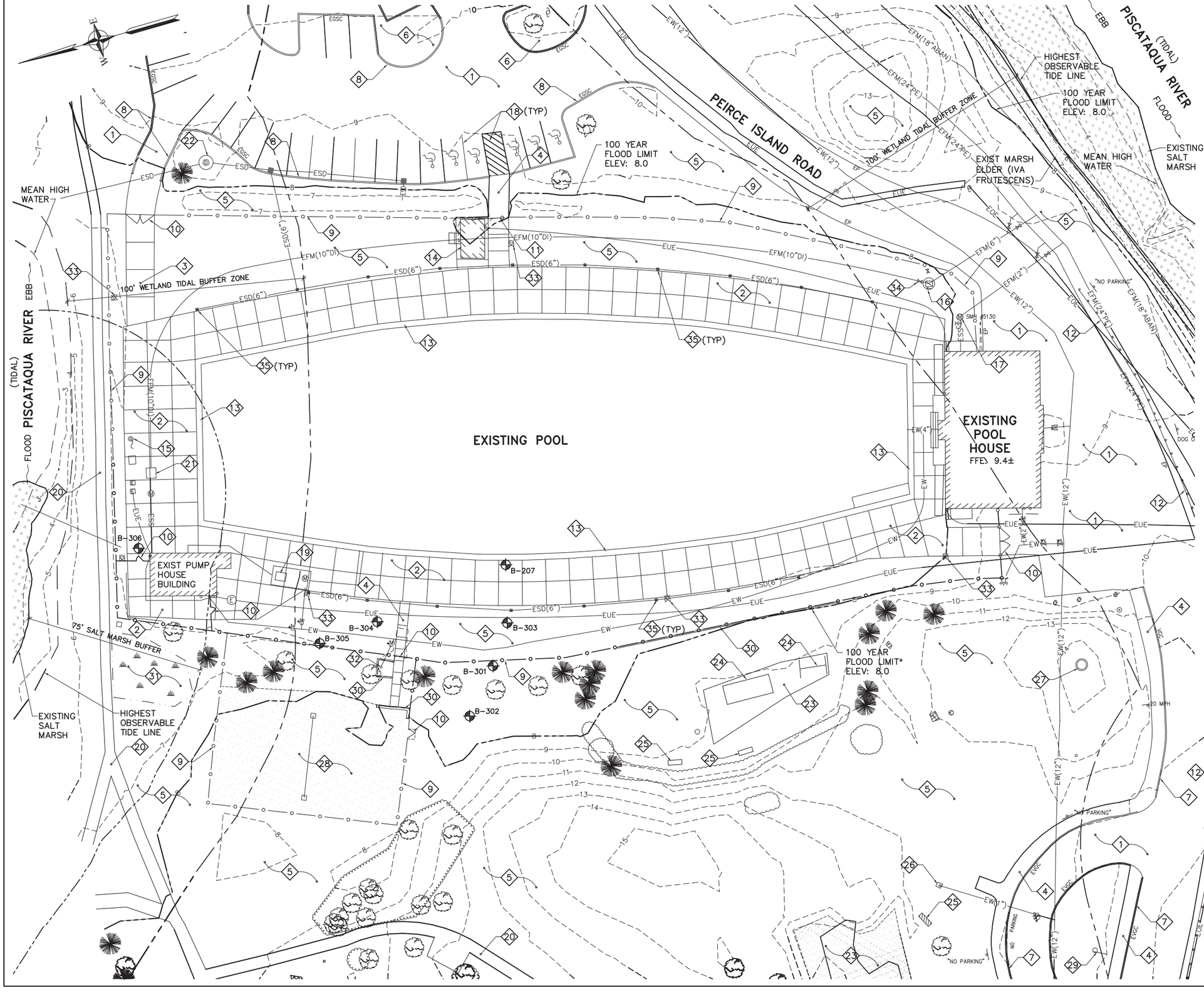
DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

CIVIL LEGEND, NOTES, AND ABBREVIATIONS

SCALE: AS NOTED
DATE: 06/17/2022
DWG.: C-001
SHEET: 5 OF 72



KEYNOTES (THIS SHEET ONLY)

1. EXISTING ASPHALT CONCRETE PAVEMENT.
2. EXISTING CONCRETE POOL DECK.
3. EXISTING CONCRETE PAVEMENT (4"± THICK).
4. EXISTING CONCRETE WALK (4"± THICK).
5. EXISTING TURF.
6. EXISTING MULCH LANDSCAPE AREA.
7. EXISTING VERTICAL GRANITE CURB.
8. EXISTING GRANITE SLOPE CURB.
9. EXISTING 6'± HIGH CHAIN LINK FENCE.
10. EXISTING 6'± HIGH CHAIN LINK SWING GATE.
11. EXISTING 6'± HIGH CHAIN LINK SLIDING GATE.
12. EXISTING WOOD GUARD RAIL.
13. EXISTING POOL GUTTER AND 2'± WIDE CONCRETE CAP.
14. EXISTING 16'x10'± PORTABLE WOOD FRAME TICKET BOOTH BUILDING.
15. EXISTING FLAG POLE.
16. EXISTING CHECK VALVE VAULT.
17. EXISTING SUBMERSIBLE SEWER GRINDER PUMP STATION.
18. EXISTING PAVEMENT MARKING.
19. EXISTING SURGE TANK.
20. EXISTING STONE DUST PATH.
21. EXISTING POOL FILTER BACKWASH PUMP VAULT.
22. EXISTING STORMWATER TREATMENT SYSTEM MANHOLE.
23. EXISTING MULCH PLAYGROUND SURFACE.
24. EXISTING PLAYGROUND EQUIPMENT.
25. EXISTING BENCH.
26. EXISTING WATER FOUNTAIN.
27. EXISTING CONCRETE PLANTER.
28. EXISTING SAND VOLLEYBALL COURT.
29. EXISTING PEIRCE ISLAND PLAYGROUND AND MUNICIPAL POOL SIGN.
30. EXISTING LANDSCAPE TIMBER.
31. EXISTING WETLAND.
32. EXISTING OUTDOOR SHOWER.
33. EXISTING IRRIGATION VALVE PIT.
34. EXISTING FORCE MAIN VALVE.
35. EXISTING LANDSCAPE DRAIN.

GRAPHIC SCALE
20' 10' 0 20' 40'
1"=20'
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY

REVISIONS

OAK POINT ASSOCIATES
ARCHITECTURE ■ ENGINEERING ■ PLANNING
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www.oakpointlm.com

WADE ALLEN LIPPERT
No. 16334
LICENSED PROFESSIONAL ENGINEER
STATE OF NEW HAMPSHIRE
9/7/22

DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

EXISTING CONDITIONS SITE PLAN

SCALE: AS NOTED
DATE: 06/17/2022
DWG.: CX101
SHEET: 6 OF 72

GENERAL NOTE

1. REFER TO DRAWING CG101 FOR EROSION AND SEDIMENT CONTROLS.

KEYNOTES (THIS SHEET ONLY)

1. SAWCUT 4"± THICK ASPHALT CONCRETE PAVEMENT.
2. REMOVE 4"± THICK ASPHALT CONCRETE PAVEMENT.
3. SAWCUT CONCRETE POOL DECK FULL DEPTH AT EXISTING JOINT.
4. REMOVE 4"± THICK CONCRETE POOL DECK. (6"± THICK AT NORTH END OF POOL)
5. REMOVE BUILDING AND FOUNDATION. REFER TO DETAIL 1/SD101.
6. REMOVE TREE. (DIA GIVEN WITH KEYNOTE)
7. STRIP AND STOCKPILE TOPSOIL.
8. REMOVE WOOD GUARD RAIL.
9. REMOVE ABOVE GROUND POOL FILL PIPING, VALVE AND CONCRETE BERM. CAP AND ABANDON EXISTING WATER LINE. REFER TO DRAWING D101.
10. REMOVE 6'± HIGH CHAIN LINK FENCE.
11. REMOVE ALUMINUM RAMP AND STORE FOR REINSTALLATION.
12. REMOVE ELECTRICAL MANHOLE.
13. REMOVE WATER VALVE.
14. REMOVE POOL PIPING.
15. REMOVE 6"x6"x10" DEEP LANDSCAPE DRAIN.
16. REMOVE DRAIN PIPE.
17. REMOVE SEWER PIPE.
18. REMOVE FORCE MAIN PIPE.
19. REMOVE SANITARY SEWER PUMPS, PIPING, AND ASSOCIATED EQUIPMENT. CAP EXISTING PIPE PENETRATIONS.
20. CAP AND ABANDON WATER LINE.
21. REMOVE EXISTING IRRIGATION SYSTEM.
22. CAP AND ABANDON UNDERGROUND ELECTRIC CONDUITS.
23. REMOVE OUTDOOR SHOWER AND FOUNDATION. STORE FOR REINSTALLATION.
24. REMOVE LANDSCAPE TIMBER.
25. REMOVE WATER LINE.

KEYNOTES (CONTINUED)

26. REMOVE UNDERGROUND ELECTRICAL CONDUIT AND CABLES.
27. REMOVE SURGE TANK PIPING, ALUMINUM HATCH, DUCTILE IRON MANHOLE FRAME/COVER, CONCRETE TOP SLAB, AND TOP 3' OF CONCRETE VAULT. BREAK CONCRETE VAULT BOTTOM AND FILL WITH COMPACTED STRUCTURAL FILL.
28. REMOVE EXISTING POOL GUTTER AND CONCRETE APRON, REFER TO DRAWING D101.
29. CAP AND ABANDON EXISTING CONDUITS.
30. REMOVE ALUMINUM HATCH AND TOP 3' OF 4'x4'x10'± DEEP CONCRETE VAULT. FILL WITH COMPACTED STRUCTURAL FILL.
31. CAP AND ABANDON EXISTING DISCHARGE PIPE.
32. REMOVE EXISTING ELECTRIC HANDHOLE.

PISCATAQUA RIVER

PEIRCE ISLAND ROAD

EXISTING POOL

EXISTING POOL HOUSE

REMOVE PUMP HOUSE BUILDING

GRAPHIC SCALE
1"=20'
20' 10' 0 20' 40'
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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WADE ALLEN LIPPERT No. 16334 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE
6/17/22

DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM

PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

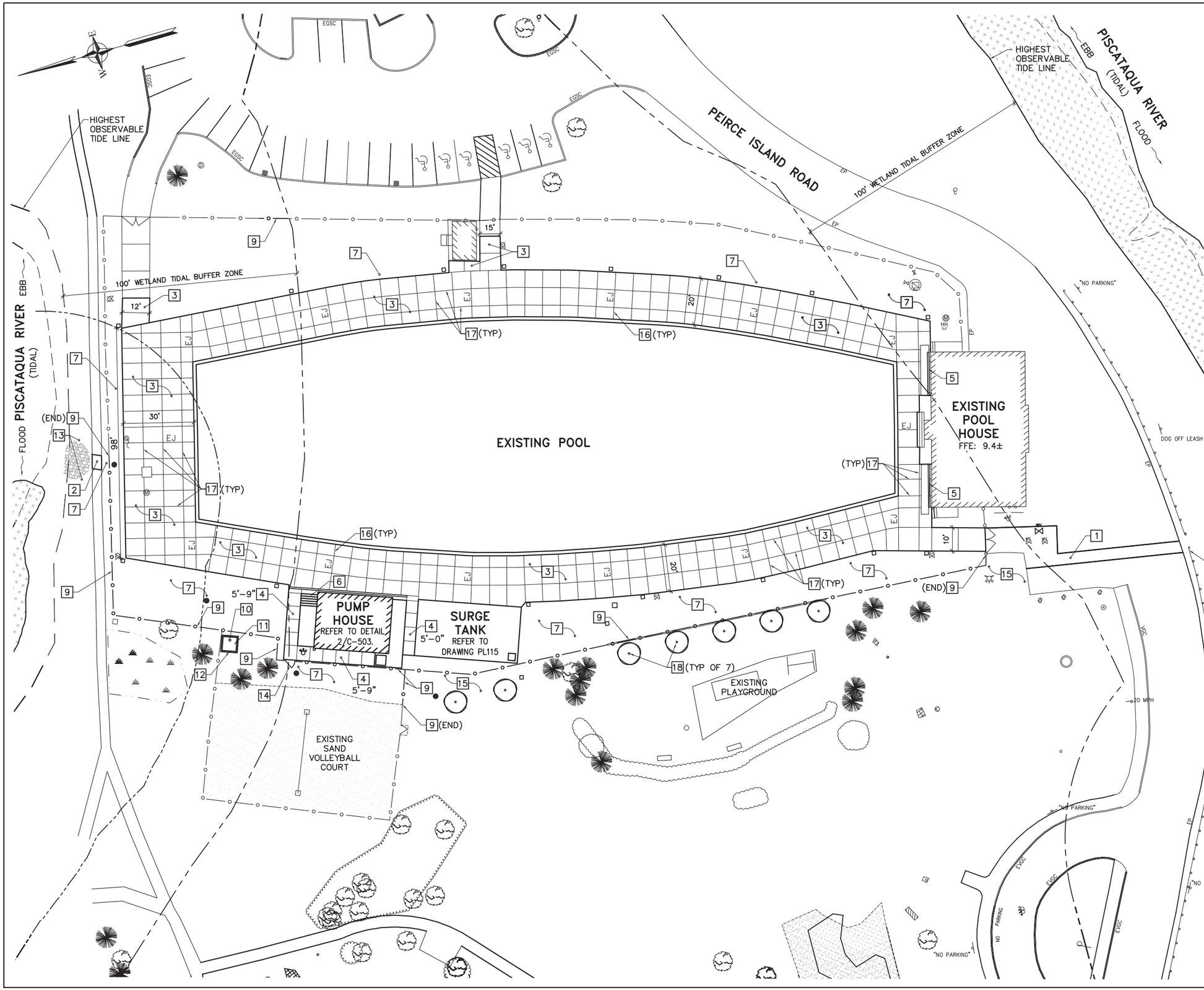
REMOVALS SITE PLAN

SCALE: AS NOTED

DATE: 06/17/2022

DWG.: CD101

SHEET: 7 OF 72



KEYNOTES (THIS SHEET ONLY)

1. ASPHALT CONCRETE PAVEMENT. REFER TO DETAIL 1/C-502.
2. CHIP STONE TRAIL. REFER TO DETAIL 6/C-502.
3. CONCRETE POOL DECK. REFER TO DETAIL 2/C-502.
4. WIDE CONCRETE WALK (WITH GIVEN WITH KEYNOTE). REFER TO DETAIL 3/C-502.
5. REINSTALL SALVAGED ALUMINUM RAMP.
6. CONCRETE STAIR. REFER TO DETAIL 2/SB502.
7. 6" TOPSOIL AND SOD. ALL DISTURBED AREAS WITHIN FENCED POOL AREA.
8. WOOD GUARD RAIL. REFER TO DETAIL 2/C-503.
9. 6' HIGH CHAIN LINK FENCE. REFER TO DETAIL 1/C-503.
10. REINSTALL SALVAGED OUTDOOR SHOWER AND FOUNDATION.
11. POROUS UNIT PAVERS. REFER TO DETAIL 4/C-503.
12. FLUSH GRANITE CURB. REFER TO DETAIL 4/C-503.
13. RESTORE RIP-RAP SLOPE.
14. 6' HIGH, 4' WIDE CHAIN LINK SWING GATE. REFER TO DETAIL 5/C503.
15. 4" TOPSOIL, SEED, FERTILIZER, AND MULCH.
16. EXPANSION JOINT. REFER TO DETAIL 5/C-502.
17. CONTROL JOINT. REFER TO DETAIL 4/C-502.
18. RED SUNSET MAPLE (ACER RUBRUM 'RED SUNSET') 2 1/2 – 3" CAL. COORDINATE LOCATION WITH CITY ARBORIST.

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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6/17/22

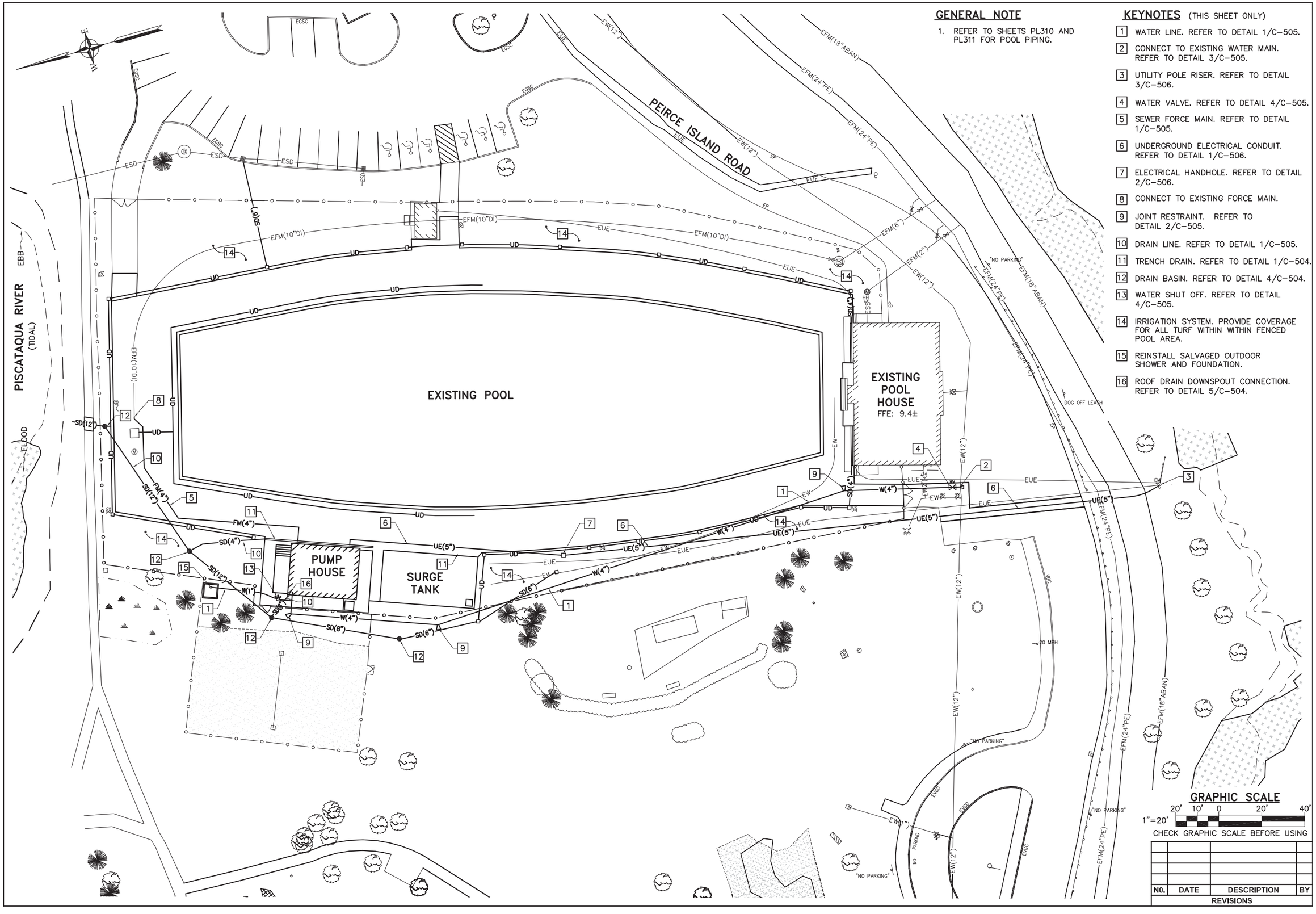
DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

SITE PLAN

SCALE: AS NOTED
DATE: 06/17/2022
DWG.: CS101
SHEET: 8 OF 72



GENERAL NOTE

1. REFER TO SHEETS PL310 AND PL311 FOR POOL PIPING.

KEYNOTES (THIS SHEET ONLY)

1. WATER LINE. REFER TO DETAIL 1/C–505.
2. CONNECT TO EXISTING WATER MAIN. REFER TO DETAIL 3/C–505.
3. UTILITY POLE RISER. REFER TO DETAIL 3/C–506.
4. WATER VALVE. REFER TO DETAIL 4/C–505.
5. SEWER FORCE MAIN. REFER TO DETAIL 1/C–505.
6. UNDERGROUND ELECTRICAL CONDUIT. REFER TO DETAIL 1/C–506.
7. ELECTRICAL HANDHOLE. REFER TO DETAIL 2/C–506.
8. CONNECT TO EXISTING FORCE MAIN.
9. JOINT RESTRAINT. REFER TO DETAIL 2/C–505.
10. DRAIN LINE. REFER TO DETAIL 1/C–505.
11. TRENCH DRAIN. REFER TO DETAIL 1/C–504.
12. DRAIN BASIN. REFER TO DETAIL 4/C–504.
13. WATER SHUT OFF. REFER TO DETAIL 4/C–505.
14. IRRIGATION SYSTEM. PROVIDE COVERAGE FOR ALL TURF WITHIN WITHIN FENCED POOL AREA.
15. REINSTALL SALVAGED OUTDOOR SHOWER AND FOUNDATION.
16. ROOF DRAIN DOWNSPOUT CONNECTION. REFER TO DETAIL 5/C–504.

NO.	DATE	DESCRIPTION	BY
		REVISIONS	

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WADE ALLEN LIPPERT No. 16334 LICENSED PROFESSIONAL ENGINEER – STATE OF NEW HAMPSHIRE
6/17/22

DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

SITE UTILITY PLAN

SCALE: AS NOTED
DATE: 06/17/2022
DWG.: CU101
SHEET: 9 OF 72

DRAINAGE STRUCTURE SCHEDULE				
	RIM	INV IN	INV IN	INV OUT
DB A	6.50	4.10 (12")	5.00 (6")	4.00 (12")
DB B	6.50	4.60 (12")	4.60 (6")	4.50 (12")
DB C	7.10	5.00 (12")	5.00 (6")	4.90 (12")
DB D	6.40	5.20 (6")		5.10 (8")

KEYNOTES (THIS SHEET ONLY)

1. DRAIN BASIN. REFER TO DETAIL 4/C–504.
2. STORM DRAIN LINE. REFER TO DETAIL 1/C–505.
3. TRENCH DRAIN. REFER TO DETAIL 1/C–504.
4. UNDER DRAIN. REFER TO DETAIL 4/C–502.
5. POOL PERIMETER UNDERDRAIN. REFER TO DETAIL 6/C–504.
6. CORE EXISTING CONCRETE VAULT AND CONSTRUCT UNDERDRAIN CONNECTION.
7. CONNECT TO BUILDING ROOF DRAIN. REFER TO DETAIL 5/C–504.
8. SILT FENCE. REFER TO DETAIL 1/C–501.
9. RIP–RAP PIPE OUTLET PROTECTION. REFER TO DETAIL 2/C–504.
10. INLET PROTECTION. REFER TO DETAIL 4/C–501.
11. LANDSCAPE DRAIN. REFER TO DETAIL 3/C–504. INSTALL TEMPORARY FILTER FABRIC UNDER GRATE UNTIL SOD IS INSTALLED. REFER TO DETAIL 4/C–501 (SIM).
12. CONNECT TO EXISTING CATCH BASIN.

PEIRCE ISLAND ROAD
PISCATAQUA RIVER (TIDAL)
EXISTING POOL
EXISTING POOL HOUSE FFE: 9.4±
PUMP HOUSE FFE: 10.00
DB A
DB B
DB C
DB D
BENCHMARK: X–CUT ON LEFT BOLT OVER MAIN OUTLET ELEV.=12.75
"NO PARKING"
DOG OFF LEASH AREA
20 MPH

GRAPHIC SCALE
20' 10' 0 20' 40'
1"=20'
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
REVISIONS			

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WADE ALLEN LIPPERT No. 16334 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 6/17/22

DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

GRADING AND DRAINAGE PLAN

SCALE: AS NOTED
DATE: 06/17/2022
DWG.: CG101
SHEET: 10 OF 72

EROSION AND SEDIMENT CONTROL NOTES

A. GENERAL NOTES

1. DURING CONSTRUCTION AND THEREAFTER, PROVIDE EROSION CONTROL MEASURES AS INDICATED AND SPECIFIED. EROSION CONTROL MEASURES MUST BE IN ACCORDANCE WITH THE "NEW HAMPSHIRE STORM WATER MANUAL".
2. TEMPORARY EROSION CONTROL MEASURES INCLUDE THE USE OF EROSION CONTROL DEVICES, TEMPORARY SEEDING AND MULCHING, AND PROVISIONS FOR STABILIZING INACTIVE AREAS. PERMANENT EROSION CONTROL MEASURES INCLUDE PERMANENT SEEDING AND MULCHING.
3. INSTALL PERIMETER EROSION CONTROLS PRIOR TO BEGINNING EARTH MOVING OPERATIONS.
4. PROVIDE INLET PROTECTION FOR EACH CATCH BASIN ON THE SAME DAY THAT BACKFILL IS PLACED AROUND THE CATCH BASIN.
5. PROVIDE 6–INCHES PLANTING SOIL, SEED AND MULCH ON DISTURBED AREAS NOT OTHERWISE SPECIFIED. COMPLETE PERMANENT SEEDING BETWEEN THE DATES OF APRIL 1 AND OCTOBER 14. WATER VEGETATED AREAS AS NECESSARY TO ESTABLISH A VIGOROUS TURF.
6. PROVIDE EROSION CONTROL MEASURES TO CONTROL EROSION AND SEDIMENTATION FROM THE PROJECT SITE. THE MEASURES INDICATED ON THE DRAWINGS ARE THE MINIMUM TO BE PROVIDED. PROVIDE ADDITIONAL MEASURES AS NECESSARY AND APPLICABLE TO CONTROL EROSION AND SEDIMENTATION FROM LEAVING THE SITE.
7. LIMIT AREAS OF EXPOSED SOILS TO THOSE AREAS THAT WILL ACTIVELY BE WORKED. TEMPORARILY STABILIZE AREAS OF DISTURBED SOIL THAT REMAIN UNWORKED FOR MORE THAN 14 DAYS USING TEMPORARY MULCHING (IF THE SOIL WILL BE PERMANENTLY STABILIZED WITHIN 30 DAYS) OR TEMPORARY SEEDING AND MULCHING (IF THE SOIL WILL NOT BE PERMANENTLY STABILIZED WITHIN 30 DAYS). PERMANENTLY STABILIZE ANY AREA OF DISTURBED SOIL BROUGHT TO FINAL GRADE WITHIN 7 DAYS. DISTURBED SOILS DO NOT INCLUDE COMPACTED BASE COURSES OR STRUCTURAL FILLS USED FOR ROADS AND PARKING LOTS. UNSTABILIZED AREA MUST NOT EXCEED 1 ACRE AT ANY ONE TIME.
8. AN AREA WILL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
   B. A MINIMUM OF 85 PERCENT VEGETATED GROWTH HAS BEEN ESTABLISHED.
   C. A MINIMUM OF 3 INCHES OF NON–EROSIVE MATERIAL SUCH STONE OR RIPRAP HAS BEEN INSTALLED.
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
9. STABILIZE ROADWAYS AND PARKING LOTS WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE. SEED AND LOAM CUT AND FILL SLOPES WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
10. INSTALL SWALES EARLY IN THE CONSTRUCTION SEQUENCE. PERMANENTLY STABILIZE SWALES PRIOR TO DIRECTING FLOW TO THEM.
11. INSTALL STABILIZED CONSTRUCTION EXIT AT VEHICULAR ACCESS POINT TO THE SITE TO PREVENT TRACKING ONTO ADJACENT EXISTING PAVEMENT SURFACES. REFER TO DETAIL 3/C–501.

B. INSPECTION AND MAINTENANCE

1. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, AREAS USED FOR STORAGE THAT ARE EXPOSED TO PRECIPITATION, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE PROJECT AREA DAILY AND BEFORE AND AFTER EACH STORM EVENT WITH PRECIPITATION GREATER THAN 0.1" AND PRIOR TO COMPLETION OF PERMANENT STABILIZATION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE NPDES STANDARDS MUST CONDUCT THE INSPECTION. THIS PERSON MUST BE IDENTIFIED IN THE INSPECTION LOG. IF BEST MANAGEMENT PRACTICES (BMPs) NEED TO BE MODIFIED OR IF ADDITIONAL BMPs ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO ANY STORM EVENT (RAINFALL). MEASURES MUST BE MAINTAINED IN EFFECTIVE OPERATING CONDITION UNTIL AREAS ARE PERMANENTLY STABILIZED.
2. KEEP AND MAINTAIN A LOG (REPORT) SUMMARIZING THE SCOPE OF THE INSPECTION, NAME(S) AND QUALIFICATIONS OF THE PERSONNEL MAKING THE INSPECTION, THE DATE(S) OF THE INSPECTION, AND MAJOR OBSERVATIONS RELATING TO OPERATION OF EROSION AND SEDIMENTATION CONTROLS AND POLLUTION PREVENTION MEASURES. MAJOR OBSERVATIONS MUST INCLUDE: BMPs THAT NEED TO BE MAINTAINED; LOCATION(S) OF BMPs THAT FAILED TO OPERATE AS DESIGNED OR PROVED INADEQUATE FOR A PARTICULAR LOCATION; AND LOCATION(S) WHERE ADDITIONAL BMPs ARE NEEDED THAT DID NOT EXIST AT THE TIME OF INSPECTION. FOLLOW–UP TO CORRECT DEFICIENCIES OR ENHANCE CONTROLS MUST ALSO BE INDICATED IN THE LOG AND DATED, INCLUDING WHAT ACTION WAS TAKEN AND WHEN.
3. MAINTAIN EROSION CONTROL MEASURES FOR THE LIFE OF THE PROJECT AND UNTIL PERMANENT STABILIZATION OF THE ENTIRE SITE IS ESTABLISHED. PERMANENT STABILIZATION MUST CONSIST OF AT LEAST 90–PERCENT VEGETATION OR PAVEMENT.
4. PROTECT STABILIZED AREAS FROM EROSION AND IMMEDIATELY REPAIR/REVEGETATE ERODED AREAS.
5. SEDIMENT ACCUMULATIONS MUST BE REMOVED FROM HAY BALE BARRIERS AND SILT FENCES WHEN THE SEDIMENT DEPTH REACHES 6 INCHES.
6. REMOVE TEMPORARY EROSION CONTROL MEASURES WITHIN 30 DAYS AFTER THE TRIBUTARY AREA HAS BEEN PERMANENTLY STABILIZED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE.

C. SEQUENCE OF CONSTRUCTION

1. INITIAL OPERATIONS INCLUDE INSTALLATION OF EROSION CONTROL DEVICES.
2. CLEAR TREES, GRUB OUT STUMPS AND STRIP TOPSOIL AND STOCKPILE. PROVIDE SILT FENCE DOWNGRADIENT OF STOCKPILES AND COVER STOCKPILES WITH MULCH.
3. COMMENCE LARGE–SCALE EARTH EXCAVATION MOVING OPERATIONS. CONSTRUCT STORM DRAINAGE SYSTEM BEGINNING AT THE LOW POINT OF THE SYSTEM.
4. CONTINUE WITH OTHER UTILITY AND PAVEMENT CONSTRUCTION.
5. COMPLETE PAVEMENT CONSTRUCTION. PROVIDE PERMANENT SEEDING, MULCHING, OR OTHER SURFACE TREATMENTS AS INDICATED IMMEDIATELY UPON ESTABLISHMENT OF FINISH GRADES.

D. SOIL STOCKPILE STABILIZATION

1. COVER SOIL AND FILL STOCKPILES EXPECTED TO REMAIN IN PLACE FOR LESS THAN 30 DAYS WITH HAY MULCH (90 LBS HAY/1000 SF) OR COVERED WITH AN ANCHORED TARP WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.
2. SEED SOIL AND FILL STOCKPILES EXPECTED TO REMAIN LONGER THAN 30 DAYS WITH A CONSERVATION MIX OF ANNUAL RYE GRASS (0.9 LB/1000 SF) AND HAY MULCHED (90 LBS. HAY/1000 SF) WITHIN 7 DAYS OR PRIOR TO ANY RAINFALL.
3. INSTALL SEDIMENT BARRIER (e.g. SILT FENCE) INSTALLED AROUND THE DOWNHILL EDGE OF THE SOIL STOCKPILES TO TRAP SEDIMENTS.

E. TEMPORARY SEEDING

1. BEDDING – REMOVE STONES AND TRASH THAT WILL INTERFERE WITH SEEDING THE AREA. WHERE FEASIBLE, TILL THE SOIL TO A DEPTH OF ABOUT 4" TO PREPARE SEED BED AND MIX THE FERTILIZER INTO THE SOIL.
2. FERTILIZER – UNIFORMLY SPREAD FERTILIZER MUST OVER THE AREA PRIOR TO BEING TILLED INTO THE SOIL. APPLY A 10–10–10 MIX OF ORGANIC FERTILIZER AT A RATE OF 300 LBS PER ACRE.
3. SEED MIXTURE – USE ANY OF THE FOLLOWING IN UPLAND AREAS:

SPECIES	ACRE	SEEDING RATES 1,000 SF	DATES	DEPTH
WINTER RYE	112 LBS	2.5 LBS	8/15 – 9/15	1 INCH
OATS	80 LBS	2.0 LBS	SPRING – 5/15	1 INCH
ANNUAL RYEGRASS	40 LBS	1.0 LBS	4/15 – 9/15 WITH MULCH	0.25 INCH

4. MULCHING FOR TEMPORARY SEEDING – WHERE IT IS IMPRACTICAL TO INCORPORATE FERTILIZER AND SEED INTO MOIST SOIL, MULCH THE SEEDED TO FACILITATE GERMINATION. APPLY MULCH IN THE FORM OF HAY OR STRAW MUST BE APPLIED AT A RATE OF 70 TO 40 90 LBS PER 1,000 SF.
5. REMOVE TEMPORARY GROWTH FROM TEMPORARY SEEDING PRIOR TO PERMANENT SEEDING.

F. MULCHING

PROVIDE TEMPORARY MULCHING ON SLOPES, CHANNELS, OTHER EROSION PRONE AREAS, AND EXPOSED SOILS THAT CANNOT RECEIVE PERMANENT COVER WITHIN 14 DAYS OF DISTURBANCE. ALSO PROVIDE MULCH FOLLOWING TEMPORARY AND PERMANENT SEEDING AS SPECIFIED. MULCH ANCHORS MUST BE USED ON SLOPES GREATER THAN 5% IN FALL (PAST OCTOBER 1, AND OVER WINTER TO APRIL 1).

MULCH TYPE	RATE PER 1000 SF
HAY OR STRAW	70 TO 40 90 LBS
WOOD CHIPS OR BARK MULCH	480 TO 920 LBS
JUTE AND FIBROUS MATTING	AS PER MANUFACTURERS' SPECIFICATIONS
CRUSHED STONE 1/4" TO 1–1/2"	SPREAD MORE THAN 1/2" THICK

G. TEMPORARY EROSION CONTROL MAT SPECIFICATIONS

1. PROVIDE STRAW EROSION CONTROL MAT CONSISTING OF A MACHINE PRODUCED MAT OF 100 PERCENT AGRICULTURAL STRAW FIBER, MINIMUM WEIGHT: 0.5 LBS/SY. NETTINGS MUST BE LIGHTWEIGHT BIO OR PHOTO DEGRADEABLE, TOP SIDE ONLY, MINIMUM WEIGHT: 1.5 LBS/1000 SF. MINIMUM WIDTH: 48", MINIMUM THICKNESS: 0.39 INCH. THE MINIMUM FUNCTIONAL LONGEVITY OF THE EROSION CONTROL MAT MUST BE 45 DAYS.

H. EXTENDED USE EROSION CONTROL BLANKET SPECIFICATION

1. PROVIDE STRAW EROSION CONTROL MAT CONSISTING OF A MACHINE PRODUCED MAT OF 100 PERCENT AGRICULTURAL STRAW FIBER, MINIMUM WEIGHT: 0.5 LBS/SY. NETTINGS MUST BE 100 PERCENT BIO OR PHOTO DEGRADABLE WOVEN NATURAL ORGANIC FIBER, TOP SIDE ONLY, MINIMUM WEIGHT: 9.3 LB/1000 SF. MINIMUM WIDTH: 6.7 FT, MINIMUM THICKNESS: 0.24 INCH. THE MINIMUM FUNCTIONAL LONGEVITY OF THE EROSION CONTROL MAT MUST BE 12 MONTHS.

I. WINTER STABILIZATION

THE WINTER CONSTRUCTION PERIOD IS FROM OCTOBER 15 THROUGH APRIL 1. IF THE SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 85% MATURE VEGETATION COVER, OR RIPRAP BY OCTOBER 15 THEN PROTECT THE SITE WITH OVER–WINTER STABILIZATION.

1. PROVIDE STABILIZATION AS FOLLOWS WITHIN A DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS:
   A. PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH MUST BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE SECURED WITH ANCHORED NETTING, OR 2 INCHES OF EROSION CONTROL MIX.
   B. PROPOSED VEGETATED AREAS HAVING A SLOPE OF GREATER THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHOULD BE SEEDED AND COVERED WITH A PROPERLY INSTALLED AND ANCHORED EROSION CONTROL BLANKET OR WITH A MINIMUM OF 4 INCH THICKNESS OF EROSION CONTROL MIX, UNLESS OTHERWISE SPECIFIED BY THE MANUFACTURER. NOTE THAT COMPOST BLANKETS SHOULD NOT EXCEED 2 INCHES IN THICKNESS OR THEY MAY OVERHEAT.
2. DO NOT INSTALL ANCHORED HAY MULCH OR EROSION CONTROL MIX OVER ACCUMULATED SNOW OR FROZEN GROUND. INSTALLATION MUST BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.
3. ANCHOR MULCH APPLIED DURING WINTER (e.g, BY NETTING, TRACKING, WOOD CELLULOSE FIBER).
4. MULCH STOCKPILES OF SOIL MATERIALS FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR–INCH LAYER OF EROSION CONTROL MIX. MULCHING MUST BE DONE WITHIN 24 HOURS OF STOCKING, AND RE–ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL. NO SOIL STOCKPILE MUST BE PLACED (EVEN COVERED WITH MULCH) WITHIN 100 FEET FROM ANY WETLAND OR OTHER WATER RESOURCE AREA.
5. CONSTRUCT GRASS LINED DITCHES AND CHANNELS AND STABILIZE BY SEPTEMBER 1. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH MUST BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
6. AFTER NOVEMBER 15TH, PROTECT INCOMPLETE ROAD OR PARKING AREAS WHERE ACTIVE CONSTRUCTION OF THE ROAD OR PARKING AREA HAS STOPPED FOR THE WINTER SEASON WITH A MINIMUM 3 INCH LAYER OF BASE COURSE (NHDOT ITEM 304.3).
7. DO NOT EXPOSE MORE THAN ONE ACRE OF THE SITE (WITHOUT STABILIZATION) AT ANY ONE TIME. GENERALLY THE EXPOSED AREA SHOULD BE LIMITED TO ONLY THOSE AREAS IN WHICH WORK WILL OCCUR DURING THE FOLLOWING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW OR RAINFALL EVENT.

J. PERMANENT SEEDING

1. REFER TO TURF AND GRASSES SPECIFICATION.

K. OFF–SITE VEHICLE TRACKING

1. SWEEP ADJACENT PAVED AREAS AND ROADS AS NECESSARY AND AS DIRECTED BY THE OWNER TO KEEP THEM FREE OF SEDIMENTS RESULTING FROM CONSTRUCTION ACTIVITIES.
2. PROVIDE A STABILIZED CONSTRUCTION EXIT AT LOCATIONS USED FOR EXITING THE CONSTRUCTION SITE AS DETAILED ON THE DRAWINGS.

L. HOUSEKEEPING

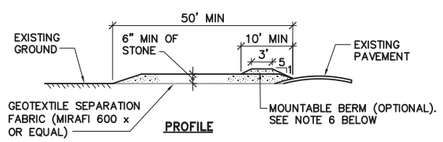
1. COLLECT AND STORE WASTE MATERIALS IN SECURELY LIDDED RECEPTACLES. TRASH AND CONSTRUCTION DEBRIS FROM THE SITE MUST BE DEPOSITED IN A DUMPSTER PROVIDED BY THE CONTRACTOR. CONSTRUCTION WASTE MATERIALS MUST NOT BE BURIED ON SITE.
2. DISPOSE OF HAZARDOUS WASTE MATERIALS IN THE MANNER SPECIFIED BY LOCAL OR STATE REGULATIONS OR BY THE MANUFACTURER.
3. STORE MATERIALS ON SITE IN A NEAT, ORDERLY MANNER IN THEIR PROPER (ORIGINAL IF POSSIBLE) CONTAINER AND IF POSSIBLE UNDER A ROOF OR OTHER ENCLOSURE. STORE ONLY SUFFICIENT AMOUNTS OF MATERIALS TO COMPLETE THE JOB.
4. DISPOSE OF SURPLUS MATERIALS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, LOCAL, STATE AND FEDERAL CODES.
5. MONITOR CONSTRUCTION RELATED EQUIPMENT AND VEHICLES FOR LEAKS AND PROVIDE REGULAR PREVENTATIVE MAINTENANCE TO AVOID LEAKAGE.
6. EQUIPMENT SHALL BE STAGED AND REFUELED IN ACCORDANCE TO ENV–WT 307.15.

M. DUST CONTROL

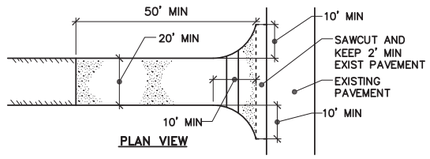
1. CONTROL DUST WITH PERIODIC WATERING OF THE EXPOSED SOIL SURFACES WITH ADEQUATE WATER TO CONTROL DUST FROM BECOMING AIRBORNE. APPLY REPETITIVE TREATMENTS AS NEEDED TO CONTROL DUST THROUGHOUT CONSTRUCTION UNTIL AREAS HAVE BEEN STABILIZED.
2. OTHER METHODS TO CONTROL DUST MAY BE ALLOWED WITH APPROVAL BY THE OWNER.

N. RIPRAP SPECIFICATION

1. PROVIDE RIPRAP CONSISTING OF SOUND, DURABLE ROCK WHICH WILL NOT DISINTEGRATE BY EXPOSURE TO WATER OR WEATHER. ANGULAR FIELD STONE, ROUGH QUARRY STONE OR BLASTED LEDGE ROCK MAY BE USED. THE MEDIAN STONE SIZE MUST BE AS INDICATED. THE MAXIMUM STONE SIZE MUST BE TWICE THE MEDIAN SIZE. PROVIDE SMALLER STONES TO FILL THE VOIDS IN THE LARGER STONES.



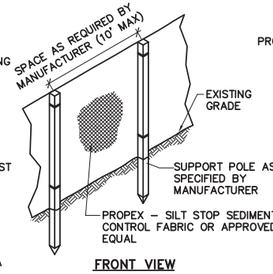
PROFILE



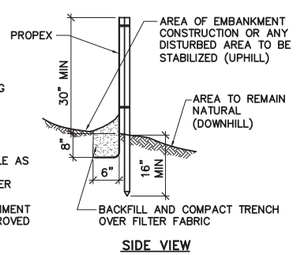
PLAN VIEW

NOTES:
1. PROVIDE 2 TO 3 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE MUST NOT BE LESS THAN 50 FEET.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE MUST NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE MUST NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 20 FEET, WHICHEVER IS GREATER.
5. PLACE GEOTEXTILE SEPARATION FILTER FABRIC OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE.
6. PIPE SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM MAY BE SUBSTITUTED FOR THE PIPE. THE MOUNTABLE BERM MUST HAVE 5:1 SLOPES AND THICKNESS REQUIRED TO DIVERT FLOW WHILE MAINTAINING ACCESS THAT CAN BE CROSSED BY VEHICLES.
7. MAINTAIN THE ENTRANCE IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO ADJACENT PAVED AREAS. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. SEDIMENT SPILLED, WASHED, OR TRACKED ONTO ADJACENT PAVED AREAS MUST BE REMOVED IMMEDIATELY.
8. CLEAN WHEELS TO REMOVE MUD PRIOR TO ENTRANCE ONTO ADJACENT PAVED AREAS. WHEN WASHING IS REQUIRED, IT MUST BE PERFORMED ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

3 STABILIZED CONSTRUCTION EXIT
C–501 (C–501) NOT TO SCALE



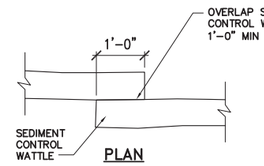
FRONT VIEW



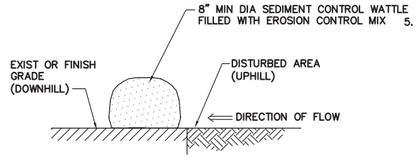
SIDE VIEW

NOTES
1. WHEN JOINTS ARE NECESSARY, FILTER FABRIC MUST BE SPLICED TOGETHER ONLY AT SUPPORT POST, WITH A MINIMUM 6" OVERLAP, AND SECURELY SEALED.
2. INSPECT SILT FENCES AFTER EACH RAINFALL AND REPAIRS/REPLACEMENT MUST BE MADE IMMEDIATELY.
3. REMOVE SEDIMENT DEPOSITS AFTER EACH STORM EVENT.
4. REMOVE SILT FENCES AFTER SATISFACTORY VEGETATIVE COVER IS ESTABLISHED OR DISTURBED AREAS ARE OTHERWISE STABILIZED. PROVIDE PLANTING SOIL, FINISH GRADE, SEED AND MULCH DISTURBED AREAS.
5. EROSION CONTROL WATTLES BE USED IN LIEU OF SILT FENCE WHERE APPROVED BY THE OWNER OR TO SUPPLEMENT EROSION CONTROL MEASURES. SEE DETAIL 2/C–501.

1 SILT FENCE
CG101 C–501 NOT TO SCALE



PLAN

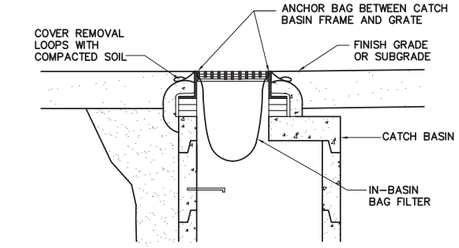


SECTION

NOTES
1. SEDIMENT CONTROL WATTLES SHALL BE MANUFACTURED FOR THE PURPOSE OF TEMPORARY SEDIMENT CONTROL AND INSTALLED ACCORDING TO THE MANUFACTURERS RECOMMENDATIONS.
2. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES 2" IN DEPTH.
3. SEDIMENT CONTROL WATTLES SHALL REMAIN IN PLACE UNTIL AREAS ARE STABILIZED.
4. SECURE SEDIMENT CONTROL WATTLES WITH CONCRETE BLOCKS OR WOOD STAKES IN LOCATIONS WHERE WATTLE FAILS TO REMAIN IN PLACE DUE TO HYDRAULIC FORCE.
5. EROSION CONTROL MIX SHALL CONSIST PRIMARILY OF WELL GRADED ORGANIC MATERIAL AND SHALL INCLUDE SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR OTHER PRODUCTS BASED ON A SIMILAR RAW SOURCE. SILT, CLAY, OR FINE SAND ARE NOT ACCEPTABLE IN THE MIX.

2 SEDIMENT CONTROL WATTLE DETAIL
C–501 (C–501) NOT TO SCALE

NOTES:
1. IN–BASIN BAG FILTERS MUST BE "DANDY SACK" BY TENCATE OR APPROVED EQUAL. INSTALL ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
2. REMOVE ACCUMULATED SEDIMENTS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.



4 INLET PROTECTION
CG101 C–501 NOT TO SCALE

NO.	DATE	DESCRIPTION	BY

REVISIONS

27 Jul, 2022 – 1:55pm
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OAK POINT ASSOCIATES
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WADE ALLEN LIPPERT No. 16334 PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 6/17/22

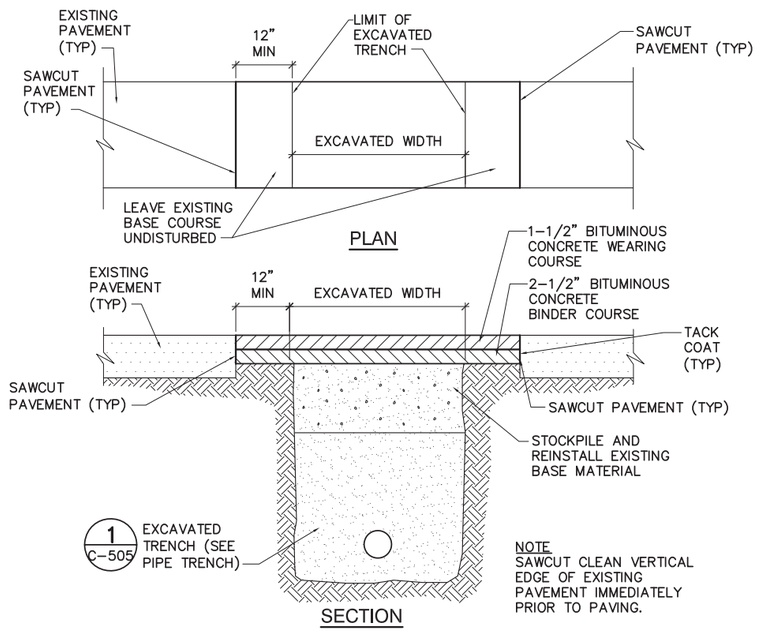
DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: WFG
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

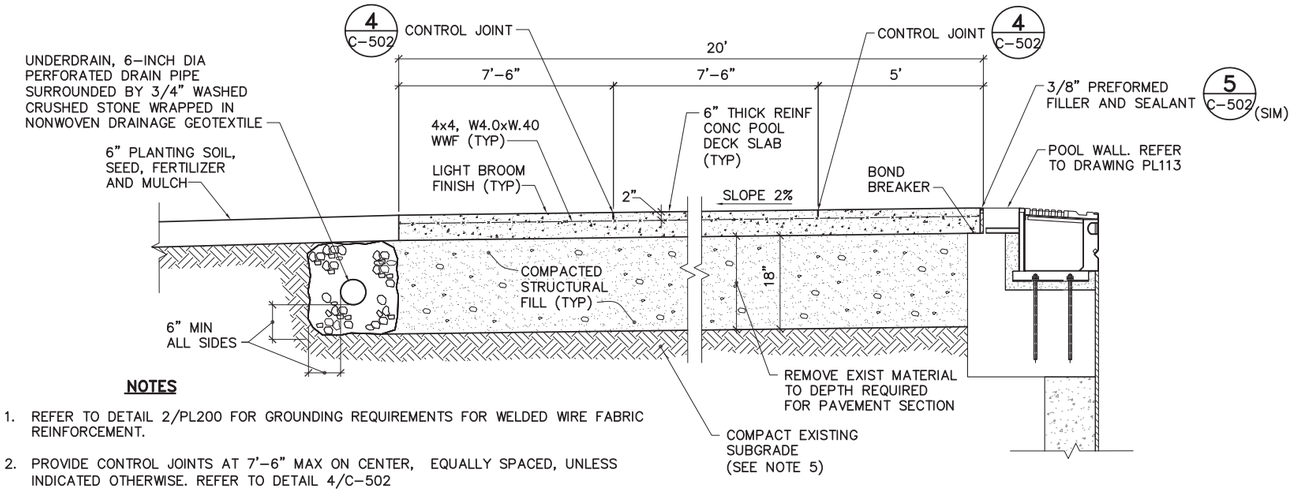
EROSION AND SEDIMENT CONTROL DETAILS

SCALE: AS NOTED
DATE: 06/17/2022
DWG.: C-501
SHEET: 11 OF 72



1 ASPHALT CONCRETE TRENCH REPAIR

CS101, C-505 — 1 C-502 — NOT TO SCALE

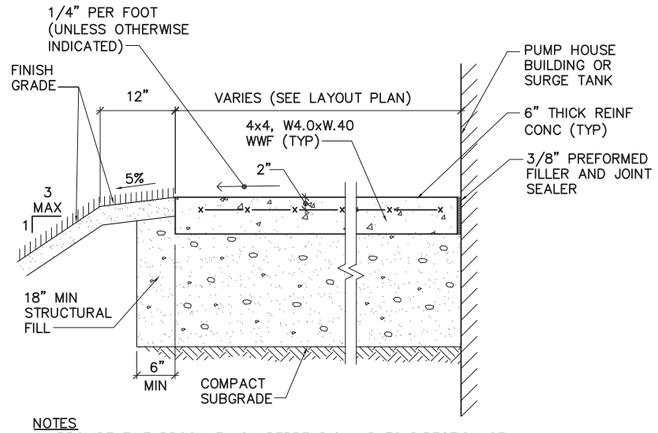


NOTES

1. REFER TO DETAIL 2/PL200 FOR GROUNDING REQUIREMENTS FOR WELDED WIRE FABRIC REINFORCEMENT.
2. PROVIDE CONTROL JOINTS AT 7'-6" MAX ON CENTER, EQUALLY SPACED, UNLESS INDICATED OTHERWISE. REFER TO DETAIL 4/C-502
3. PROVIDE EXPANSION JOINTS AT 60'-0" MAX ON CENTER, EQUALLY SPACED, UNLESS INDICATED OTHERWISE. REFER TO DETAIL 5/C-502.
4. PROVIDE 3/8" PREFORMED FILLER AND JOINT SEALANT WHERE POOL DECK ABUTS THE TRENCH DRAIN, BUILDING FOUNDATION, OR STRUCTURES.
5. AFTER REMOVAL OF EXISTING FILL AND ORGANIC MATERIAL, AND PRIOR TO STRUCTURAL FILL BASE PLACEMENT, COMPACT THE EXPOSED SUBGRADE WITH A MINIMUM OF TWO PASSES OF A 5-TON, OR LARGER, STATIC ROLLER TO IMPROVE DENSITY OF THE SUBGRADE SOILS. EXCAVATE AREAS WHERE SOFT AND/OR LOOSE SOILS ARE ENCOUNTERED OR THAT WEAVE AND/OR RUT IN EXCESS OF 1-INCH IN DEPTH AND REPLACE WITH COMPACTED STRUCTURAL FILL. THE COMPACTION PROCESS MUST BE PERFORMED UNDER THE OBSERVATION OF A QUALIFIED GEOTECHNICAL ENGINEER.

2 CONCRETE POOL DECK

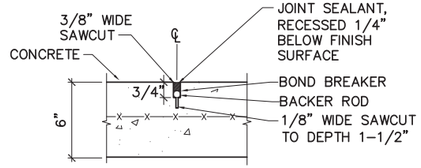
CS101, SB502, C-504 — 2 C-502 — NOT TO SCALE



NOTES
1. PROVIDE FINE BROOM FINISH PERPENDICULAR TO DIRECTION OF TRAVEL.
2. PROVIDE CONTROL JOINTS AT 6'-0" MAX ON CENTER, EQUALLY SPACED, UNLESS INDICATED OTHERWISE — 4 C-502
3. PROVIDE 3/8" PREFORMED FILLER AND JOINT SEALANT WHERE WALK ABUTS THE SURGE TANK OR BUILDING FOUNDATION. — 5 C-502 (SIM)

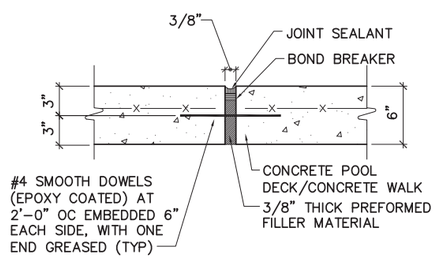
3 CONCRETE WALK

CS101, C-505 — 3 C-502 — NOT TO SCALE



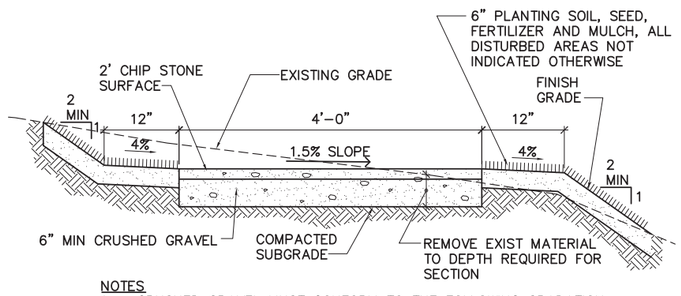
4 CONTROL JOINT

C-502, CS101, CS101 — 4 C-502 — NOT TO SCALE



5 EXPANSION JOINT

C-502, C-504, CS101 — 5 C-502 — NOT TO SCALE



NOTES
1. CRUSHED GRAVEL MUST CONFORM TO THE FOLLOWING GRADATION:

SIEVE SIZE	PERCENT FINE BY WEIGHT
1-1/2 INCH	100
1 INCH	90-100
NO. 4	27-52
NO. 200	0-10

2. CHIP STONE SURFACE MUST CONFORM TO THE FOLLOWING GRADATION:

SIEVE SIZE	PERCENT FINE BY WEIGHT
1/2 INCH	90-100
3/8 INCH	75-90
1/4 INCH	60-75
NO. 30	40-60
NO. 100	20-40
NO. 200	10-20

3. CHIP STONE MUST BE MADE OF HARD, DURABLE, SHARP EDGED ROCK FRAGMENTS, FREE FROM SILT, ORGANIC, OR OTHER DELETERIOUS MATERIAL.
4. SEE GRADING PLAN FOR FINISH GRADES.

6 CHIP STONE TRAIL SECTION

CS101 — 6 C-502 — NOT TO SCALE

NO.	DATE	DESCRIPTION	BY
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www.oakpoint.com

STATE OF NEW HAMPSHIRE
WADE ALLEN LIPPERT
No. 13331
LICENSED PROFESSIONAL ENGINEER
6/17/22

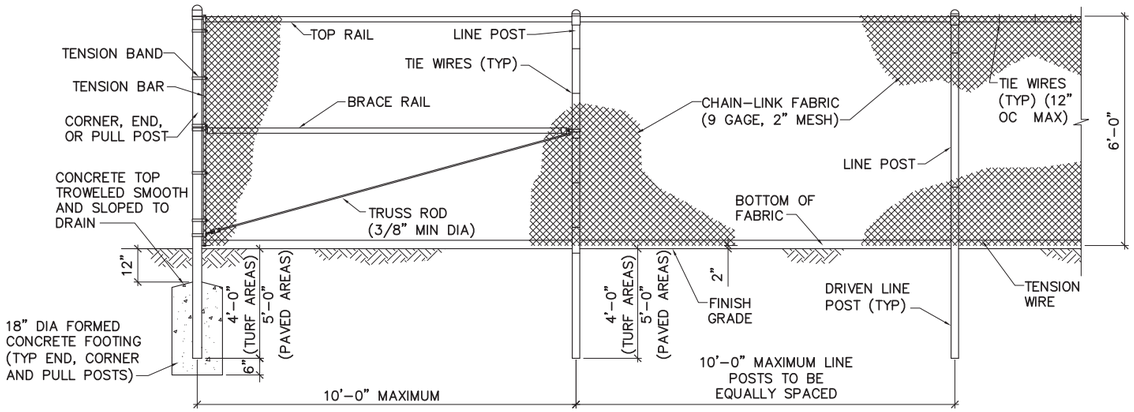
DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

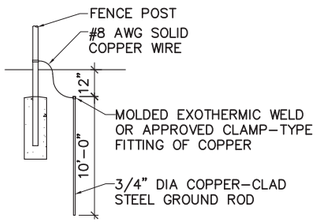
PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

SITE DETAILS 1

SCALE: AS NOTED
DATE: 06/17/2022
DWG.: C-502
SHEET: 12 OF 72



FENCE DETAIL



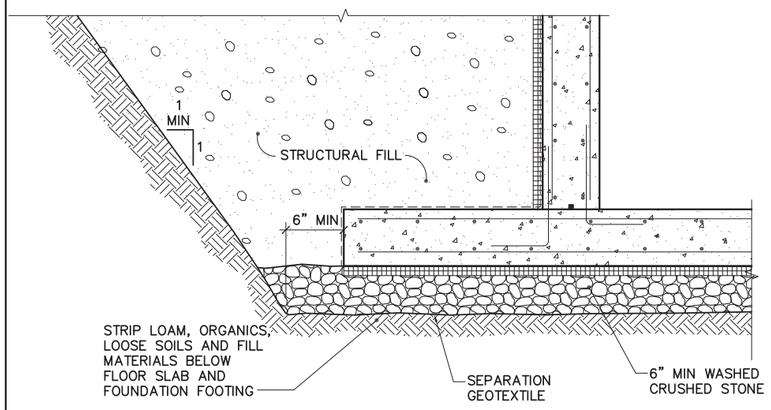
GROUNDING DETAIL

STEEL POST SCHEDULE	
USE AND SECTION	MINIMUM OUTSIDE DIMENSIONS (NOMINAL)
CORNER, END & PULL POSTS TUBULAR – ROUND	2.875" OD
LINE POSTS TUBULAR – ROUND	2.375" OD
TOP, BOTTOM & BRACE RAILS TUBULAR – ROUND	1.66" OD

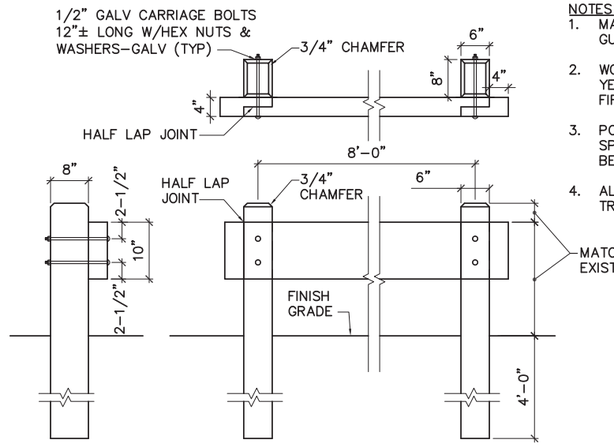
NOTES
1. INSTALL WIRE TIES, RAILS, POSTS, AND BRACES ON THE SECURE SIDE OF THE FENCE ALIGNMENT. INSTALL CHAIN-LINK FABRIC ON THE SIDE OPPOSITE THE SECURE AREA.
2. PROVIDE 9-GAGE GALVANIZED STEEL TIE WIRES FOR FASTENING THE FENCE FABRIC TO FENCE POSTS AND RAILS. PROVIDE 16-GAGE STAINLESS STEEL TIE WIRES FOR FASTENING FENCE FABRIC TO TENSION WIRES.

1 CHAIN LINK FENCE
CS101 / C-503 NOT TO SCALE

NOTES
1. PROVIDE STRUCTURAL FILL WITHIN 4 FEET OF FOOTINGS AND FOUNDATION WALLS.
2. WHERE BEDROCK IS ENCOUNTERED, REMOVE ROCK TO ONE FOOT BELOW BOTTOM OF FOOTING AND REPLACE WITH COMPACTED CRUSHED STONE.
3. SEE SHEET SB101 FOR FOUNDATION DETAILS, INCLUDING SLAB, FOOTING, INSULATION, AND VAPOR BARRIER INFORMATION.
4. PROTECT PREPARED SUBGRADES AND FOUNDATION SOILS FROM FREEZING, EXCESSIVE MOISTURE, AND CONSTRUCTION ACTIVITIES. DO NOT ALLOW SURFACE WATER TO ACCUMULATE ON PREPARED SUBGRADES OR FOUNDATION SOILS. RECONSTRUCT SUBGRADE/FOUNDATION SOILS DAMAGED BY FREEZING TEMPERATURES, FROST, RAIN, ACCUMULATED WATER, OR CONSTRUCTION ACTIVITIES, AS DIRECTED BY QUALIFIED GEOTECHNICAL ENGINEER AND AS APPROVED BY THE OWNER, AT NO ADDITIONAL COST TO THE OWNER.
5. REFER TO SPECIFICATION SECTION 312000, "EARTHMOVING" FOR ADDITIONAL REQUIREMENTS.

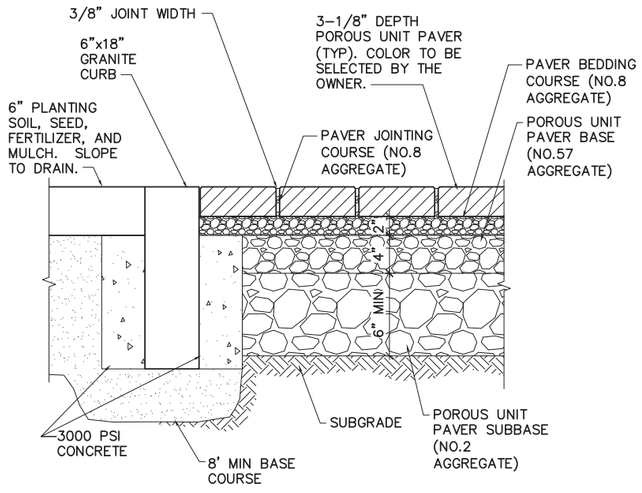


2 FOUNDATION PREPARATION DETAIL
CS101 / C-503 NOT TO SCALE



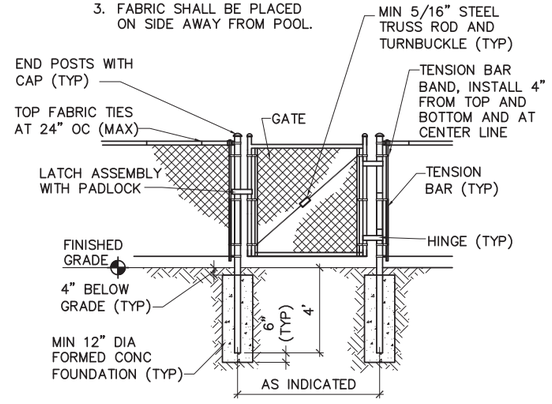
2 WOOD GUARD RAIL
CS101 / C-503 NOT TO SCALE

NOTES
1. MATCH EXISTING ADJACENT WOOD GUARD RAIL TO REMAIN.
2. WOOD RAILS TO BE LONGLEAF YELLOW PINE OR DOUGLAS FIR-STRUCTURAL GRADE OR BETTER.
3. POSTS TO BE DOUGLAS FIR, OR SPRUCE STRUCTURAL GRADE OR BETTER.
4. ALL TIMBERS SHALL BE PRESSURE TREATED.



4 POROUS UNIT PAVER
CS101 / C-503 NOT TO SCALE

CHAIN LINK FENCE NOTES:
1. ALL POSTS, RAILS, FABRIC AND APPURTENANCES SHALL BE GALVANIZED.
2. CONCRETE FOR POST FOUNDATIONS SHALL BE 3000 PSI MIN.
3. FABRIC SHALL BE PLACED ON SIDE AWAY FROM POOL.



5 CHAIN LINK GATE
CS101 / C-503 NOT TO SCALE

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WADE ALLEN LIPPERT No. 16334 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 6/17/22

DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

SITE DETAILS 2

SCALE: AS NOTED
DATE: 06/17/2022
DWG.: C-503
SHEET: 13 OF 72

17 Jun, 2022 – 12:07pm
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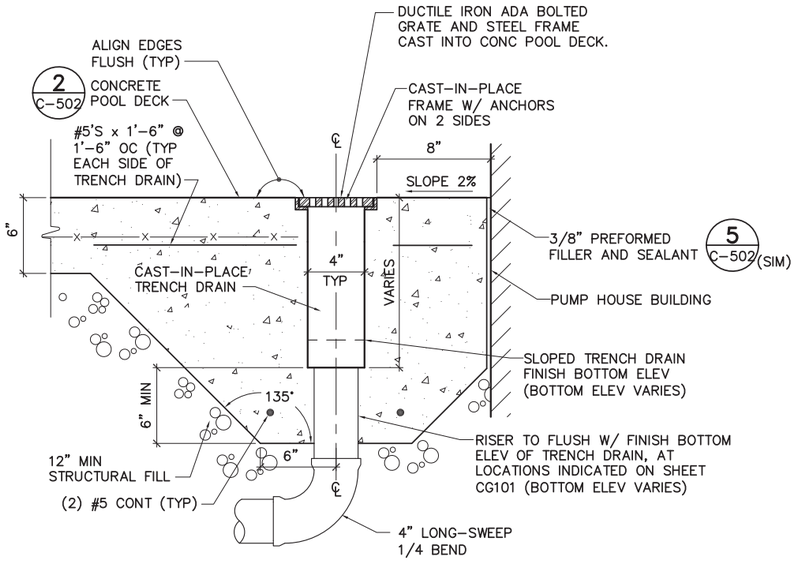
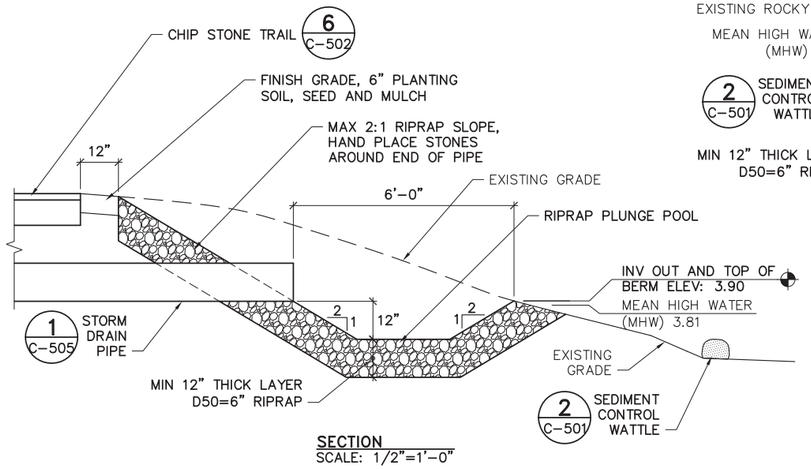


1 TRENCH DRAIN

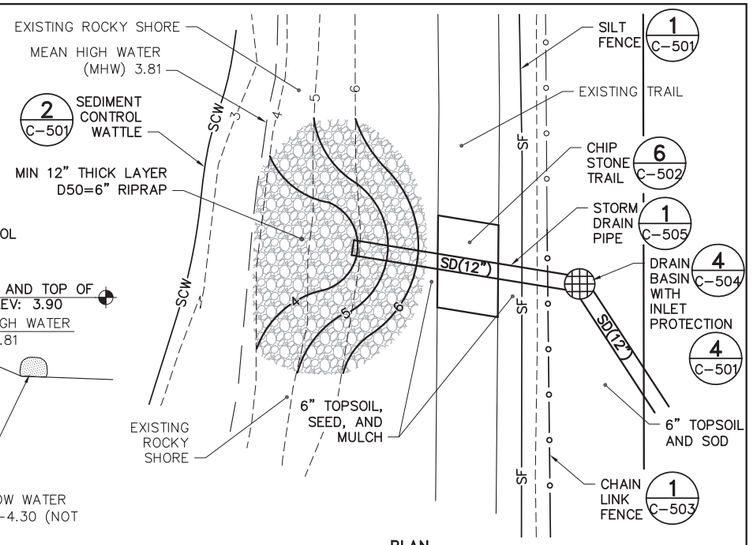
CG101, CU101 — 1 C-504 NOT TO SCALE



SECTION
SCALE: 1/2"=1'-0"

NOTES
1. PIPE OUTLET CONSTRUCTION MUST OCCUR DURING LOW TIDE CONDITIONS.
2. TEMPORARY EROSION CONTROL MEASURES MUST BE INSTALLED PRIOR TO CONSTRUCTION AND REMOVED ONCE THE OUTLET HAS BEEN STABILIZED.
3. OUTLET CONSTRUCTION AND PERMANENT STABILIZATION MUST BE COMPLETED IN ONE WORKING DAY PRIOR TO HIGH TIDE CONDITIONS.

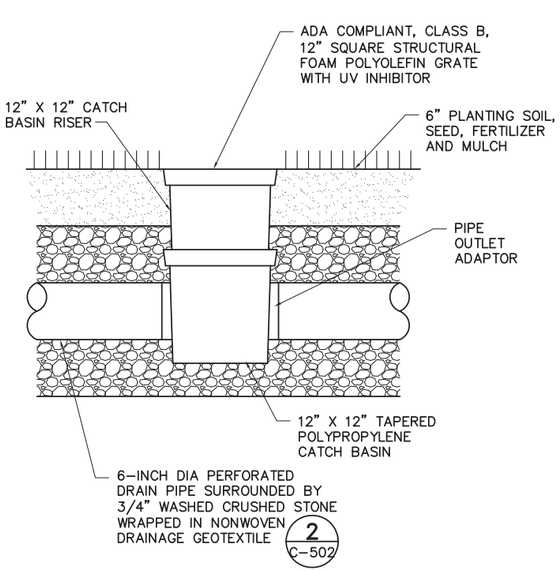
MEAN LOW WATER (MLW): −4.30 (NOT SHOWN)



PLAN
SCALE: 1"=5'

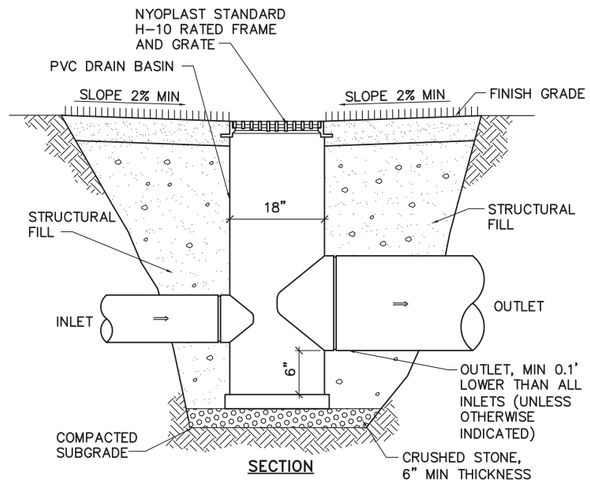
2 RIP RAP OUTLET PROTECTION DETAIL

CG101 — 2 C-504 SCALE: AS NOTED



3 LANDSCAPE DRAIN

CG101 — 3 C-504 NOT TO SCALE

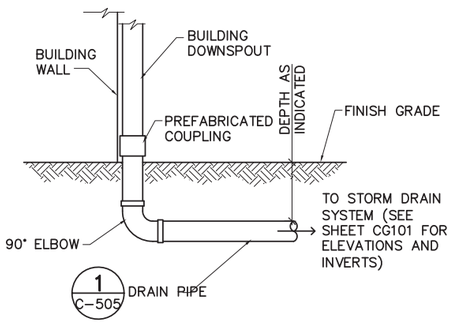


SECTION

NOTES
1. PROVIDE PIPE PENETRATION AS INDICATED ON SHEET CG101.
2. PVC CATCH BASIN MUST BE NYOPLAST DRAIN BASIN, H-10 RATED OR APPROVED EQUAL.

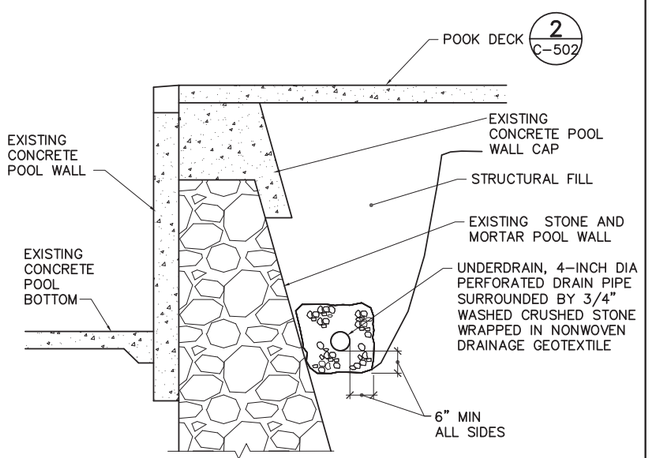
4 DRAIN BASIN

CU101, CG101 — 4 C-504 NOT TO SCALE



5 ROOF DRAIN RISER

CU101, CG101 — 5 C-504 NOT TO SCALE



6 POOL UNDERDRAIN DETAIL

CG101 — 6 C-504 NOT TO SCALE

GRAPHIC SCALES
1"=5' (5' 0 5' 10')
1/2"=1'-0" (2' 1' 0 1' 4')
CHECK GRAPHIC SCALE BEFORE USING

NO.	DATE	DESCRIPTION	BY
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27 Jul, 2022 – 1:39pm
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WADE ALLEN LIPPERT No. 13633 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 6/17/22

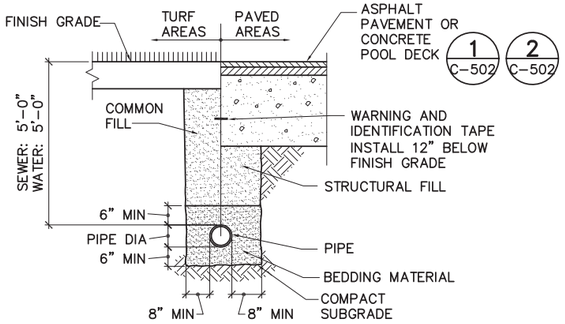
DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

SITE DETAILS 3

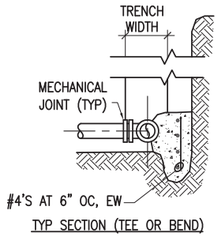
SCALE: AS NOTED
DATE: 06/17/2022
DWG.: C-504
SHEET: 14 OF 72



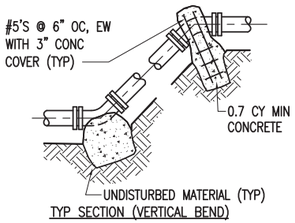
NOTES
1. EXCAVATION WORK MUST COMPLY WITH OSHA STANDARDS. TRENCH SIDEWALLS MUST BE VERTICAL FROM TRENCH BOTTOM TO 12" ABOVE TOP OF PIPE.
2. PROVIDE A MINIMUM OF 18" VERTICAL CLEARANCE BETWEEN CROSSING PIPES.
3. PROVIDE 10' HORIZONTAL CLEARANCE BETWEEN WATER AND SEWER LINE.
4. WHERE 5'-0" MIN COVER OVER SEWER LINE CANNOT BE ACHIEVED PROVIDE 4' WIDE, 4" THICK RIGID FOAM BOARD INSULATION OVER BLANKET MATERIAL. (2-2" LAYERS WITH JOINTS STAGGERED)
5. PROVIDE A SEPARATION OF AT LEAST 18 INCHES BETWEEN THE BOTTOM OF THE WATER PIPING AND THE TOP OF THE SEWER PIPING IN CASES WHERE WATER PIPING CROSSES ABOVE SEWER PIPING. IF SEPARATION CANNOT BE ACHIEVED PROVIDE 6" MIN CONCRETE ENCASEMENT OF WATER PIPE FOR A DISTANCE OF 10' ON EITHER SIDE OF THE CROSSING.

1 PIPE TRENCH
CU101, CG101, C-502, C-504, C-505 — C-505 — NOT TO SCALE

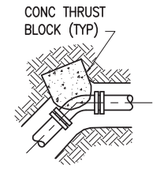
NOTES
1. PROVIDE JOINT RESTRAINT FOR TEES, BENDS, AND PLUGS. FOR DUCTILE IRON PIPE PROVIDE CONCRETE THRUST BLOCKS AND WEDGE-ACTION TYPE RETAINER GLANDS. FOR POLYETHYLENE PIPE PROVIDE CONCRETE THRUST BLOCKS.
2. WRAP DI PIPE FITTINGS IN POLYETHYLENE OR BUILDING PAPER PRIOR TO INSTALLATION OF CONCRETE THRUST BLOCKING.
3. PLACE CONCRETE PAVERS OR BRICKS IN FRONT OF PLUGS BEFORE PLACING THRUST BLOCKS.
4. PLACE THRUST BLOCKS AGAINST UNDISTURBED MATERIAL. WHERE TRENCH WALL HAS BEEN DISTURBED, EXCAVATE LOOSE MATERIAL AND EXTEND CONCRETE THRUST BLOCK TO UNDISTURBED MATERIAL. AREA OF THRUST BLOCKS SHOWN ARE BASED ON A MINIMUM SOIL BEARING CAPACITY OF 1,500 POUNDS PER SQUARE FOOT AND 1.5 SAFETY FACTOR. BEARING CAPACITY MAY BE ALTERED BASED ON CONDITIONS ENCOUNTERED WITH APPROVAL BY THE OWNER.
5. EXTEND CONCRETE THRUST BLOCKING THE ENTIRE LENGTH OF THE FITTING. DO NOT COVER ANY PART OF THE JOINT WITH CONCRETE.
6. PROVIDE LIFT HOOKS INTO THRUST BLOCKS AT END CAPS AND PLUGS.
7. CONCRETE THRUST BLOCKS MUST BE 3,000 PSI (MIN) PORTLAND CEMENT CONCRETE.
8. PROVIDE CONCRETE THRUST BLOCKING IN ACCORDANCE WITH NFPA 24 AND CITY OF PORTSMOUTH WATER DIVISION CONSTRUCTION MANUAL.
9. PROVIDE WEDGE-ACTION TYPE RETAINER GLANDS ACCORDING TO THE MANUFACTURERS INSTRUCTIONS.



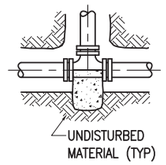
TYP SECTION (TEE OR BEND)



TYP SECTION (VERTICAL BEND)



TYP PLAN VIEW (HORIZONTAL BEND)



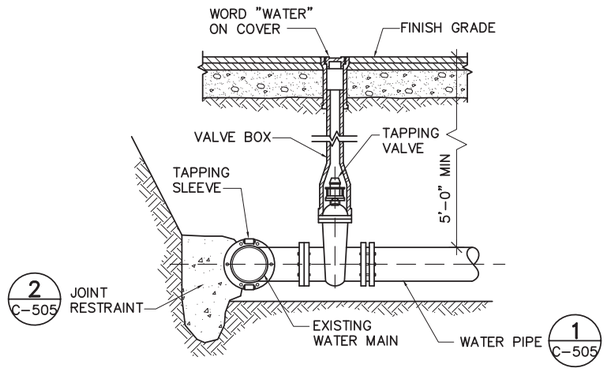
TYP PLAN VIEW (TEE)

THRUST BLOCK SCHEDULE
SQUARE FEET OF CONCRETE THRUST BLOCKING BEARING ON UNDISTURBED MATERIAL (BASED ON 100 PSI WORKING PRESSURE)

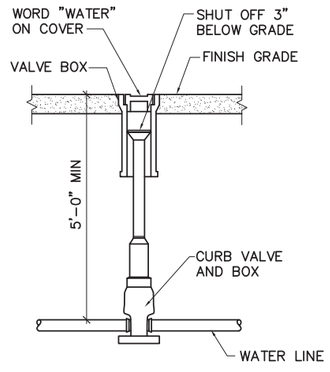
REACTION TYPE	PIPE SIZE (INCHES)				
	4"	6"	8"	10"	12"
TEE	1.4	2.8	4.8	7.3	10.3
90° BEND	1.9	4.0	6.8	10.3	14.5
45° BEND	1.0	2.2	3.7	5.6	7.9
22.5° BEND	0.5	1.1	1.9	2.8	4.0
11.25° BEND	0.3	0.6	1.0	1.4	2.0

NOTE: FOR OTHER PRESSURES, AREA OF CONCRETE THRUST BLOCKING IS DIRECTLY PROPORTIONAL TO AREAS SHOWN IN ABOVE TABLE.

2 JOINT RESTRAINT
CU101, C-505 — C-505 — NOT TO SCALE



3 WATER SERVICE CONNECTION
CU101 — C-505 — NOT TO SCALE



4 WATER SHUT OFF VALVE
CU101 — C-505 — NOT TO SCALE

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STATE OF NEW HAMPSHIRE
WADE ALLEN LIPPERT
No. 18334
LICENSED PROFESSIONAL ENGINEER
6/17/22

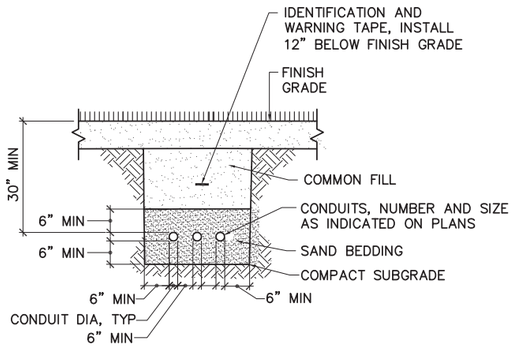
DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

SITE DETAILS 4

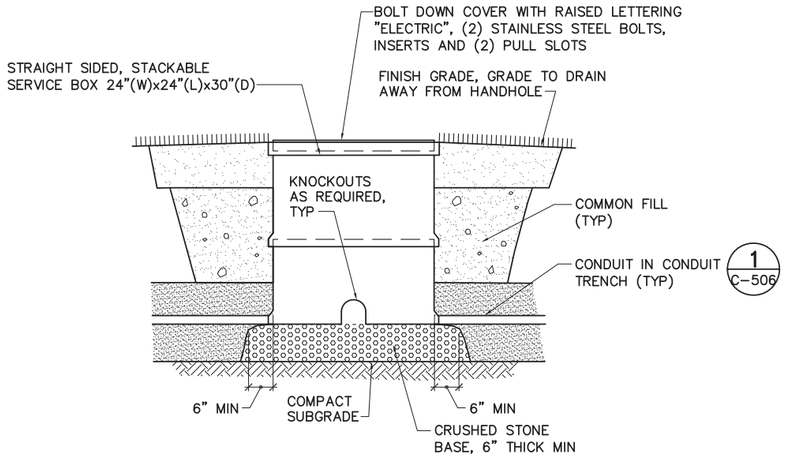
SCALE: AS NOTED
DATE: 06/17/2022
DWG.: C-505
SHEET: 15 OF 72



NOTES
1. ELECTRIC SERVICE TRENCH MUST CONFORM TO EVERSOURCE CONSTRUCTION STANDARDS.

2. PROVIDE 18" MIN SEPARATION TO WATER LINES.

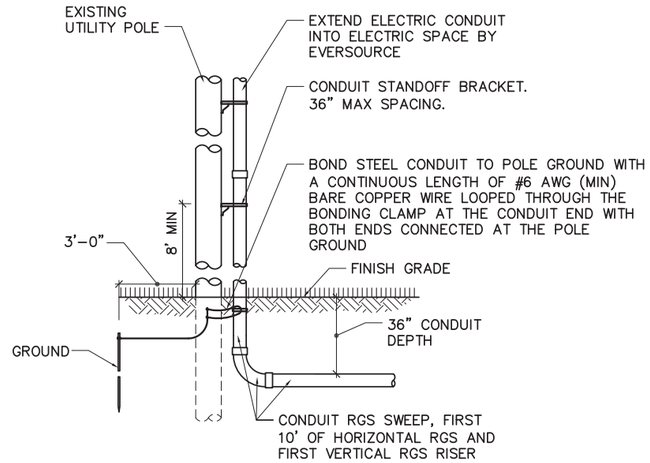
1 ELECTRIC SERVICE TRENCH
CU101, C-506 / C-506 NOT TO SCALE



NOTES
1. HOUSING AND COVER MUST BE POLYMER CONCRETE REINFORCED WITH A HEAVY WEAVE FIBERGLASS REINFORCING WITH A COMPRESSIVE STRENGTH NO LESS THAN 10,000 PSI AND ABLE TO SUPPORT A SERVICE LOAD OF NO LESS THAN 20,800 POUNDS OVER A 10"x10" AREA.

2. HANDHOLE BOX AND COVER MUST BE LISTED BY UNDERWRITERS LABORATORIES.

2 ELECTRIC HANDHOLE
CU101 / C-506 NOT TO SCALE



NOTES
1. ELECTRIC CONDUIT AND SPARE CONDUIT RISER MUST BE IN ACCORDANCE WITH EVERSOURCE STANDARD.

2. COMMUNICATION CONDUIT RISER MUST BE IN ACCORDANCE WITH FAIRPOINT COMMUNICATIONS STANDARDS AND SPECIFICATIONS. PROVIDE SWEEP AND FIRST SECTION OF VERTICAL CONDUIT SIMILAR TO ELECTRIC RISER INSTALLATION.

3. WEATHER SEAL TOP END OF VERTICAL RISER CONDUITS AFTER INSTALLATION OF CABLES. TEMPORARILY CAP THE TOP END OF THE VERTICAL RISER CONDUIT UNTIL CABLES ARE INSTALLED.

3 UTILITY POLE CONDUIT RISER
CU101, EP101 / C-506 NOT TO SCALE

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WADE ALLEN LIPPERT No. 13331 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 6/17/22

DESIGNED BY: WAL
DRAWN BY: WAL
CHECKED BY: PJM
PROJECT: 21904.14

CITY OF PORTSMOUTH
1 Junkins Avenue
Portsmouth, NH 03801

PEIRCE ISLAND PUMP HOUSE AND POOL RENOVATION
Peirce Island Road
Portsmouth, NH 03801

SITE DETAILS 5

SCALE: AS NOTED
DATE: 06/17/2022
DWG.: C-506
SHEET: 16 OF 72

EXHIBIT 7

PROJECT NARRATIVE

(EXPLANATION OF METHODS, TIMING, AND MANNER OF HOW THE PROJECT WILL MEET STANDARD PERMIT CONDITIONS (ENV-WT 307))

Peirce Island Public Outdoor Pool

Project Narrative

Section 1. Required Information

a. <u>Project Purpose and Description (Env-Wt 603.02)</u>

The City of Portsmouth is proposing a renovation of the Peirce Island swimming pool and associated pump house on Peirce Island Road to bring a deteriorated public facility up to current health and safety requirements. These renovations include replacement of the pool's existing vinyl liner, pool gutter, underground surge tank, concrete pool deck, pump house, and existing stormwater drainage system on the east side of the pool. The old pump house will be removed, and a new pump house built in a location outside the Tidal Buffer Zone with its doorways and other exterior building wall penetrations elevated 2 feet above the Piscataqua River flood level to protect the building systems from potential flood events. A new stormwater drainage system will be constructed to collect runoff from the new pump house roof, adjacent walkway and lawn area. The new drainage system will outlet to the Piscataqua River on the north side of the pool. The pipe outlet will be located above mean high water elevation and stone rip rap will be installed to provide erosion protection at the outlet. The majority of the impacts will be temporary, associated with renovation of the existing pool, pool deck, and adjacent lawn area. Demolition of the existing pump house and construction of the existing pump house will result in a net increase in impervious area due to the required larger size of the new pump house.

Most of the work will occur in the protected shoreland zone. However, demolition of the existing pump house, and portions of the new stormwater drainage system and pool infrastructure renovations will occur in the previously developed tidal buffer zone and within the 75 ft buffer of a salt marsh. Installation of the outlet for the new stormwater drainage system will also occur within the rocky shore below the HOTL.

The specifics of the project are as follows:

Pool Repairs

The Peirce Island swimming pool was originally constructed as a Works Progress Administration (WPA) project in 1937 and was original constructed with a gravel bottom with mortar stone masonry sidewalls. It was later improved with concrete sidewalls, concrete bottom, and PVC liner. The pool's vinyl liner is approximately 25 years old, exceeding its life expectancy of 10 – 15 years, and is reported to be leaking. The liner will be replaced. Portions of the pool gutter are in poor condition resulting in safety hazards. The entire pool gutter system and associated supply and return piping will be replaced. The existing underground surge tank is inadequate in volume to meet required standards. The tank will be removed and replaced with a new larger underground tank adjacent to the proposed pump house building discussed below. Portions of the concrete pool deck are in poor condition with spalling and longitudinal cracking. There are several areas of pool deck with joint openings greater than the 1/2-inch or changes in level of greater than 1/4-inch allowed by the Americans with Disabilities Act (ADA). Portions of the deck pond water and does not meet requirements of NH Env-Wq 1100 (public bathing facilities) for minimum slope. The entire concrete deck will be replaced to facilitate the new gutter system and

correct deficiencies. The existing stormwater drainage system on the east side of the pool drains to a hydrodynamic separator located between the pool and adjacent parking area which then discharges to the Piscataqua River. The drainage on the east side of the pool will be replaced with a new system which will have the same general configuration.

The pool deck configuration will match the existing configuration with the exception of in the vicinity of the old and new pump house buildings. All pool repairs and improvements are generally being conducted with in-kind materials and configuration and are not expected to have any adverse impact.

Pump House Replacement and New Stormwater Drainage System

The pool mechanical systems are located in an existing 18 foot by 30 foot pump house building located near the northwest corner of the pool. A small freshwater wetland is located to the west side of the existing building. The existing building is structurally deficient and inadequate in size to meet current requirements. It is not feasible to renovate the existing building due to structural deficiencies and requirements of the new pool filtration system. Additionally, the existing building is also located within the 100-year flood zone and is vulnerable to future flooding. The existing building will be removed and replaced with a 24-foot by 32-foot new building located outside the TBZ. The finished floor elevation of the pump house will be elevated two feet above the 100-year flood elevation to protect the building and pool systems within the building from flooding and to account for future sea level rise.

Several building locations were evaluated to minimize site disturbance while meeting elevation and layout constraints of the new pool piping layout. The new pump house will be located to the south of the existing building. Relocation of the building will allow 1,222 square feet of impervious building and paved area within the TBZ to be converted to pervious turf. Finish grade in this area will be approximately the same as existing. The proposed new pump house location is within a previously developed pool deck and lawn area. Seven trees ranging in diameter from 4 to 26 inches in diameter will need to be removed to construct the proposed pump house and new underground surge tank.

A new stormwater drainage system will be constructed to collect the runoff from the building roof, adjacent walkways and lawn area. The drainage system will outlet into the Piscataqua River north of the pool. The pipe outlet will be located within the rocky shore, below the HOTL but above the mean high water elevation with stone rip rap installed for erosion protection at the outlet.

No impacts to the salt marsh, freshwater wetland, or marsh elder (*Iva fruescens*; a NH Threatened species) are anticipated for any portion of the proposed work. Installation of the new stormwater drainage system outlet and associated rip rap will require 125 square feet of permanent impact to the rocky shore north of the pool. The existing walking trail and vegetation along the northern edge of the pool disturbed by the stormwater drainage system outlet installation will be restored. Erosion and sediment controls will be installed prior to commencement of earth moving or demolition activities and maintained throughout construction until the site is permanently stabilized. During construction of the proposed project, inspection and maintenance of erosion and sedimentation control practices will be the responsibility of the general contractor. The contractor will also be required to provide a dewatering plan complying with NHDES requirements prepared by a New Hampshire professional engineer prior to construction. Dewatering discharge will not be permitted to discharge directly to the river.

Description of Natural Resources

Peirce Island is located in the City of Portsmouth on the Piscataqua River. It is owned by the City and the State of NH, and provides multiple public services, including the WWTF, the State Fish Pier, the public outdoor pool, boat ramp, park, and numerous walking trails. The Project Area consists of the public outdoor pool located on the western half of the island. The shoreline of Peirce Island is bordered by estuarine habitats, including rocky shore (E2RS1/2) and salt marsh (E2EM1), with a salt marsh located within 100 ft of the portions of the proposed work. A small freshwater wetland is also present off the northwestern corner of the pool. No impacts to the salt marsh or freshwater wetland are proposed. Minor impacts to the rocky shore north of the pool are proposed for the installation of a new stormwater drainage system outlet. Most of the work lies within the protected shoreland, with the demolition of the existing pump house and portions of the new stormwater drainage system and pool repairs lying within the 100-foot tidal buffer zone. Marsh elder (*Iva frutescens*), a State Threatened plant species that is known to occur on Peirce Island, was surveyed for within a 100-foot buffer of the project in Summer 2021 and 2022 and none were found.

See representative photographs of resources in Exhibit 15.

Tidal Buffer Zone

The proposed demolition of the existing pump house and portions of the new stormwater drainage system and pool repairs occurs within the jurisdictional tidal buffer zone (TBZ), the majority of which is previously developed (PDTBZ). The majority of the PDTBZ within the project area includes the pool, pool deck, existing pump house, walking trail, paved parking lot, and surrounding grassed lawns that are regularly maintained. A sparse, 3-foot wide vegetation buffer occurs along the top of the slope north of the pool that leads down to a combination of rocky shore and cobble/gravel shore, which is dominated by patches of beach rose (*Rosa rugosa*) and a mix of perennial grasses and forbs. A portion of this vegetation buffer not containing beach rose will be disturbed as part of the installation of the stormwater outlet and will be restored following completion of the installation. An isolated persistent emergent wetland that is seasonally flooded/saturated (PEM1E) occurs directly west of the existing pumphouse. This wetland is dominated by cattails (*Typha latifolia*) and purple loosestrife (*Lythrum salicaria*) and its soils contain prominent redox concentrations with a depleted matrix (F3). The wetland had saturated soils at the surface and a water table 5 inches from the surface. This emergent wetland will not be impacted by the project.

Salt Marsh

Several sections of salt marsh occur on the southern, more protected side of the island, as well one section on the northern side of the island. The marsh on the southern side are a mix of high marsh and low marsh with typical *Spartina* species (*S. alterniflora* in the low marsh and *S. patens* dominating the high marsh), while the marsh on the northern side is exclusively low marsh. Typical salt marsh forbs dominate in the upper marsh and marsh elder (NH State Threatened; see NHB21-1136) and occurs in multiple stands along the upland border on the southern side of the island and is reported to occur on the northern side of the island northwest of the project area. No marsh elder was found to occur along the upland border of the salt marsh on the northern side of the island within 100 feet of the project. No salt marsh or marsh elder will be impacted by the project.

Rocky Shore

The northern portion of Peirce Island below the Highest Observable Tide Line is predominately bedrock outcrop and cobble/gravel shore. Rockweeds (*Ascophyllum* and *Fucus* spp) are prevalent in the lower intertidal zone on boulders and ledge, but much of the remaining rocky shore is unvegetated. A small area of the unvegetated rocky shore will be impacted by the proposed installation of a new stormwater drainage outlet and rip rap apron north of the Peirce Island public pool.

Protected Shoreland

Over half of the proposed work will occur in the protected shoreland above the TBZ. All the protected shoreland above the TBZ in the western portion of the island is developed and regularly maintained including a portion of the public outdoor pool, associated parking lot, surrounding lawn areas, unpaved walking paths, and Peirce Island Road.

State-Listed Species

The NHB data review (NHB21-1136; Exhibit 19) indicates eelgrass (*Zostera maritima*) and Atlantic and Shortnose Sturgeon (*Acipenser oxyrinchus* and *A. brevirostrum*) occur in the subtidal waters off Peirce Island. The proposed work will have no adverse impacts to those marine species. The project does not impact any estuarine or marine wetland resources, nor does it include significant noise, blasting, or adverse impacts to water quality.

Proposed Mitigation

Mitigation for impacts to the Previously Developed Tidal Buffer Zone and Rocky Shore

Per Env-Wt 801.03 the City considered permittee-responsible mitigation opportunities within the vicinity of the proposed work and determined on-site mitigation for the 125 sf of permanent impact to the rocky shore is not practicable. City representatives are currently unaware of any "shovel-ready" local mitigation projects for a rocky shore environment elsewhere in the municipality of the proposed work. Thus, mitigation for 125 sf of permanent impacts to the rocky shore will be provided via submittal of an ARM fund payment of $1,487.37. ARM fund payment was determined using the NHDES Aquatic Resource Mitigation Fund Wetland Payment Calculation spreadsheet.

Section 8. How Project meets Relevant Standard Conditions and Approval Criteria

Env-WT 307.03 Protection of Water Quality

a) Water quality will be protected during construction using Best Management Practices (BMP) for controlling runoff and stabilizing sediments.
b) Soil stockpiles will be managed to minimize risk of erosion and sedimentation to tidal waters or wetlands. See Exhibit 5, Sheets CG101 and C-501 for erosion and sediment controls.
c) All water quality measures are designed to provide maximum protection during storm events during construction, and will be removed from the site when construction is complete, and vegetated areas are stable.
d) During construction, erosion and sedimentation control structures will be inspected daily, and any sediments accumulated behind erosion control structures will be removed and disposed at a stable and suitable site.

e) Substrates exposed during construction in the TBZ and protected shoreland will be permanently stabilized within 3 days of completion of final grades. Construction of the outfall between the last downstream drainage basin and the pipe outlet will be completed in one work day. All disturbed areas associated with the outfall will be stabilized with rip rap stone or erosion control blanket prior to the end of the work day.
f) No work requiring a coffer dam or turbidity barrier is proposed in or near open water. Installation of the new stormwater drainage outlet will be done during dry weather and low tidal conditions
g) The contractor will be required to inspect equipment daily for leaking fuel, oil and hydraulic fluid prior to initiating work. All leaks shall be contained and repaired to prevent fluids from reaching groundwater, surface water or wetlands. Kits for oil and diesel spills will be readily accessible at each work site, and equipment operators will be trained in their use.
h) Equipment shall be staged and refueled in accordance to Env-Wt 307.15.

Env-Wt 307.05 Protection Against Invasive Species

a) Does not apply.
b) All equipment used will be completely free of all aquatic and terrestrial plants, seeds, and other propagules, and all exotic aquatic species of wildlife as defined in RSA 487: 16, I-a
c) All applicable requirements of RSA 487:15-25 shall be met.
d) To prevent the use of soil or seed stock containing nuisance or invasive species, the contractor shall follow the Invasive Plant BMPs.

Env-Wt 307.06 Protection of Rare, Threatened or Endangered Species or Critical Habitat

a) through c) No direct impacts to the marsh elder bordering the southern edge of the island shall occur. All work activities will be directed to avoid and minimize adverse impacts to soils upgradient of the plants.

Env-Wt 307.07 Consistency with Shoreland Water Quality Protection Act

All project activities shall be conducted in compliance with the applicable requirements of RSA 483-B and Env-Wq 1400 during and after construction.

Env-Wt 307.08 Protection of Designated Prime Wetlands and Duly-Established 100-Foot Buffers

No Designated Prime Wetlands are present within the vicinity of the proposed work.

Env-Wt 307.09 Shoreline Structures

No shoreline structures are proposed as part of this project.

Env-Wt 307.09 Dredging Activity Conditions

No dredging activity is proposed as part of this project.

Env-Wt 307.11 Filling Activities

No filling activities are proposed as part of this project.

Env-Wt 307.12 Restoring Temporary Impacts; Site Stabilization. In addition to all other applicable conditions in this part, the following conditions shall apply to restoring all temporary impacts:

a) Within 3 days of final grading or temporary suspension of work in an area that is in or adjacent to surface waters, all exposed soil areas shall be stabilized by:
    (1) Seeding and mulching, if during the growing season; or
    (2) mulching with tackifiers on slopes less than 3:1 or netting and pinning on slopes steeper than 3:1 if not within the growing season
b) Any seed mix used shall not contain plant species that are exotic aquatic weeds;
c) Mulch used within an area being restored shall be natural straw or equivalent non-toxic, non-seedbearing organic material;
d) If any temporary impact area that is stabilized with seeding or plantings does not have at least 75% successful establishment of wetlands vegetation after 2 growing seasons, the area shall be replanted or reseeded, as applicable;
e) Does not apply as wetland soils will not be used in the areas being restored.
f) If any temporary impact area that is stabilized by seeding or plantings does not have at least 75% successful establishment of vegetation after 2 growing seasons, the area shall be replanted or reseeded, as applicable.
g) If a temporary impact area is restored by seeding or plantings, then:
    (1) The work shall not be deemed successful if the area is invaded by nuisance species such as common reed or purple loosestrife during the first full growing season following the completion of construction; and
    (2) The person responsible for the work shall submit a remediation plan to the department that proposes measures to be taken to eradicate nuisance species during this same period;
h) The stumps of those trees cut as part of construction of the new pump house will be removed as part of the excavation required for the building basement and underground surge tank.
i) Does not apply as no impacts to wetland areas are part of the proposed work; only impacts the PDTBZ and the rocky shore.

Env-Wt 313.01 Criteria for Approving Standard Permit Applications

a) The department shall not approve an application for a standard permit and issue a permit unless:
    (1a) The project has provided a functional assessment and demonstrated there will be no adverse impacts to surrounding wetlands and waters, and the Tidal Buffer Zone.
    (1b) Avoidance and minimization criteria have been met to the degree feasible.
    (1c) A proposal for appropriate mitigation for permanent impacts in the Tidal Buffer Zone and rocky shore is provided. Please see Exhibit 7 – Project Narrative.
    (2) Recommended applicable conditions are provided above.
    (3) All resource-specific criteria in Env-Wt 500 and 600 have been met.
    (4) All project-specific criteria in Env-Wt 500 and 600 have been met.
    (5) The work does not infringe on abutting properties or unreasonably affect the value or enjoyment of property abutting owners'
b) Does not apply.

c) The requirements to avoid and minimize have been met:
    (1) There is no practicable alternative that would have a less adverse impact on the area or the environment and still meet the critical infrastructure needs and public benefits proposed.
    (2) The project will not cause random or unnecessary destruction of wetlands; or
    (3) Cause or contribute to significant degradation of waters of the state or loss of any PRAs

Env-Wt 516.02 Criteria for Intake and Outflow Structures

b) In addition to meeting the applicable conditions established in Envt-Wt 300, the department shall not approve an application for a permit to construct an outflow structure unless:
    (1) The proposed outflow will not cause scouring due to the proposed installation of a rip rap apron at the outfall and the outflow will not endanger any vegetation, finfish, crustacea, shellfish, or wildlife;
    (2) The structure will be located above mean high water elevation north of Peirce Island pool, so no danger to navigation, recreation, or commerce is anticipated.

Env-Wt 516.03 Application Requirements for Intake and Outflow Structures

a) Does not apply as the outflow will be located above mean high water elevation and minimal to no passage of aquatic organisms is anticipated;
b) Installation of the outlet via trench excavation and backfilling will be done during dry weather and low tidal conditions and is expected to be completed in one work day. Appropriate erosion controls will be installed surrounding the work area during outlet installation to protect water quality downslope and removed following stabilization of the work area. All disturbed areas associated with the outfall will be stabilized with rip rap stone or erosion control blanket prior to the end of the work day.
c) The bank restoration shall be constructed and landscaped to conform with existing bank conditions on either side of the outlet installation. The face of the bank shall be stabilized with rip rap conforming to the existing rip rap in place on either side of the outlet installation. The top of bank will be seeded and covered with erosion control blanket to re-establish the vegetative buffer between the public walking trail and the rocky shore. The restored area will be monitored and replanted/reseeded as necessary to ensure at least 75% successful establishment of vegetation after 2 growing seasons along the top of bank.
d) Cross section and specifications of the proposed stone rip rap apron to be installed at the stormwater drainage system outlet is provided in Exhibit 5 – Sheets C-504 Detail 2
e) Maintenance and repairs shall be done on an as need basis. Should need for repairs arise, work will be done during dry weather and low tidal conditions to protect the water quality of the adjacent tidal waters.
f) No large groundwater withdrawal will be required for the proposed work.
a) No AoT permit is required as the work will qualify under Env-Wq 1503.03 General Permit by Rule.
b) No cofferdam shall be required as the outlet will be located above mean high water elevation and installation will be done during dry weather and low tidal conditions.

Env-Wt 516.04 Design and Construction Requirements for Intake and Outflow Structures. In addition to meeting the applicable design and construction requirements of Env-Wt 307, an intake or outflow project shall be designed to:

a) The outflow will be located above mean high water elevation regular entrainment of aquatic organisms unlikely.
b) The outflow will be installed on a bank with a slope that exceeds 25% that is currently stabilized with rip rap. The slope will be re-stabilized with rip rap following installation of the outflow.
c) Highly concentrated flow is not anticipated from the outflow as it drains a relatively small area. Additionally, a rip rap apron shall be installed at the outlet to prevent erosion.
d) Installation of the rip rap will be done at low tide conditions;
e) The proposed work will not be done in flow water.
f) There is no potential for channel constriction due to the installation of this outflow;
g) Restoration plans conform with bank stabilization criteria under Env-Wt 514 and shoreland standards for native species revegetation and species composition pursuant to Env-Wq 1412.05; and
h) No brook floater mussels or dwarf wedge mussels were identified in the NHB Data Check.

Env-Wt 516.06 Maintenance and Repair of Intake and Outflow Structures

a) The City of Portsmouth shall monitor the outflow structure for effectiveness, water quality, and stability.
b) If maintenance or repair of the outflow structure is needed the project shall be classified in accordance with Env-Wt 407

EXHIBIT 8

PERMITTEE RESPONSIBLE MITIGATION PROJECT WORKSHEET

PERMITTEE RESPONSIBLE MITIGATION PROJECT WORKSHEET

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/Rule: 482-A: / Env-Wt 800

SECTION 1. PROPOSED PERMITTEE RESPONSIBLE MITIGATION PROJECT TYPE		
UPLAND BUFFER PRESERVATION: ☐ AQUATIC RESOURCE RESTORATION: ☐ MITIGATION PAYMENT: ☒		
SECTION 2. PROPOSED MITIGATION PROJECT LOCATION INFORMATION (if applicable)		
STREET/ROAD: Peirce Island Road	TOWN/CITY: Portsmouth	TAX MAP/LOT #: 208/1
SECTION 3. APPLICANT INFORMATION		
APPLICANT NAME: City of Portsmouth		
APPLICANT MAILING ADDRESS: 680 Peverly Hill Road		
CONTACT INDIVIDUAL: Terry Desmarais, PE		
DAYTIME TELEPHONE: (603) 766-1421	EMAIL (IF ANY): tldesmarais@cityofportsmouth.com	
SECTION 4. RESOURCE WORKSHEET SUMMARY		
AQUATIC RESOURCES INVOLVED IN PROJECT: See Table Below.		
TOTAL PRESERVATION PROPOSED: Upland: Acres Wetland: Acres		
TOTAL LENGTH OF STREAM ON PROPERTY: Linear Feet % having 100-ft wooded zone: in direction % upland: in direction		
# CONFIRMED VERNAL POOLS:	# POTENTIAL VERNAL POOLS:	
AREA OF WETLAND RESTORATION PROPOSED: acres	AREA OF WETLAND CREATION PROPOSED: acres	
AREA OF WETLAND ENHANCEMENT PROPOSED: acres	AREA OF UPLAND ENHANCEMENT PROPOSED: acres	
SECTION 5. BRIEF NARRATIVE DESCRIBING PROPOSED PERMITTEE RESPONSIBLE MITIGATION		
See Text Below, and Exhibit 7 - Project Narrative		
SECTION 6. SIGNATURE AND CERTIFICATION		
- I hereby certify that: ▪ The information contained in or otherwise submitted with this application is true, complete, and not misleading to the best of my knowledge and belief; ▪ **I understand that:** - Submitting false, incomplete, or misleading information is grounds for denying the application or revoking any award of ARM Funds that is made based on such information; and - I am subject to the penalties for making unsworn false statements specified RSA 641:3 or any successor New Hampshire statute.		
SIGNATURE: _____	**DATE:** _____ / _____/ _____	

Lori.Sommer@des.nh.gov or (603) 271-4059
NHDES Wetlands Bureau, Concord, NH 03303-0095
www.des.nh.gov

Summary of Aquatic Resource(s) Involved in Project

The following information is required to be provided about the aquatic resources found on the proposed impact site and the mitigation site. New Hampshire RSA 482-A:3 requires a wetland permit for any proposed project that involves dredging and filling wetlands or impacts to the bed or bank surface waters such as rivers and streams. Before NHDES will issue a permit, applicants must demonstrate that their project proposal will avoid adverse impacts to aquatic resources and will minimize and mitigate those impacts that are unavoidable. When impacts to aquatic resources are unavoidable, applicants must identify the wetland and stream(s) resource types that will be lost during the development of the project. Identifying the functions and values of the aquatic resource that will be lost at the project site better ensures that they can be recreated and transferred to the proposed mitigation site. Please use the table formats provided below to document all aquatic resources types on the impact site and the mitigation site. A separate table should be prepared for each site. *Additional rows may be required for projects proposing impacts to multiple resource types.*

Wetland Resources: Wetlands shall be classified by US Fish and Wildlife Service Manual WS/OBS-79/31 Classification of Wetlands and Deepwater Habitats of the United States, Cowardin et al, 1979, reprinted 1992.

Stream Resources: For permittee responsible mitigation projects to restore or improve stream systems, the streams on the project site shall be reviewed and the following information collected to the best extent possible:

Stream order according to New Hampshire Hydrography Dataset (NHHD)	Geomorphology including degradation
Rosgen stream type	Position within the surrounding landscape
Impacts to upstream and downstream flooding	Connectivity improvement for aquatic organism passage
Stream bed materials	Fisheries presence
Sediment Transport capacity	Characterization of the adjacent buffers in terms of vegetative coverage
Channel form	Floodplain connectivity

These general principals are described within the New Hampshire Stream Crossing Guidelines, University of New Hampshire, May 2009.

Wetland Functions & Values: A wetland evaluation is the process of determining the values of a wetland based on an assessment of the functions it performs. The evaluation of wetland functions and values should be determined through use of the *Method for Inventorying and Evaluating Freshwater Wetlands in New Hampshire*, 2015 edition (2015 NH Method) –*OR*– U.S. Army Corps of Engineers (USACE) New England District *Highway Methodology Workbook Supplement*, 1999 edition (1999 US ACE Highway Workbook Supplement). The evaluation should focus on the following:

Ecological Integrity (EI), Wetland-Dependent Wildlife Habitat (WH), Fish and Aquatic Habitat (FH), Scenic Quality (SQ), Educational Potential (EP), Wetland-based Recreation (WR), Flood Storage (FS), Groundwater (GW), Sediment Trapping (ST), Nutrient Trapping/Retention/Transformation (NT), Shoreline Anchoring (SA), Noteworthiness (NW).

Secondary Impacts: The USACE federal mitigation guidance should be consulted if the project involves conversion of forested wetlands to scrub-shrub or emergent wetlands, cutting of riparian buffer and impacts within the buffer to vernal pools.

WETLAND/STREAM RESOURCE SUMMARY

Wetland ID or Stream Number	**Cowardin Wetland Class** (list all that apply) **or Stream Type**	**Principal Functions & Values**	**Project Impacts**						**Vernal Pool Present? ID or Number**	**Other Comments**
			Permanent Wetland (sq.ft.)	**Permanent Stream Bank** (lin.ft.)			**Temporary** (sq.ft.)	**Secondary** (sq.ft.)		
				Bank Left	Bank Right	Channel				

MITIGATION RESOURCE SUMMARY

Wetland ID or Stream Number	**Cowardin Wetland Class** (list all that apply) **or Stream Type**	**Principal Functions & Values**	**Wetland/Stream Resources**			**Vernal Pool Present? ID or Number**	**Other Comments**
			Area of Wetland (sq.ft. or acres)	**Streams** (lin.ft.)			
				Length on Property	% having 100 foot wooded zone		

Peirce Island Public Swimming Pool

Mitigation for impacts to the Previously Developed Tidal Buffer Zone and Rocky Shore

Per Env-Wt 801.03 the City considered permittee-responsible mitigation opportunities within the vicinity of the proposed work and determined on-site mitigation for the 125 sf of permanent impact to the rocky shore is not practicable. City representatives are currently unaware of any "shovel-ready" local mitigation projects for a rocky shore environment elsewhere in the municipality of the proposed work. Thus, mitigation for 125 sf of permanent impacts to the rocky shore will be provided via submittal of an ARM fund payment of $1,487.37. ARM fund payment was determined using the NHDES Aquatic Resource Mitigation Fund Wetland Payment Calculation spreadsheet.

EXHIBIT 9

ADDITIONAL RESOURCE INFORMATION

(No additional resource information is required)

EXHIBIT 10

PROJECT SPECIFIC INFORMATION REQUIRED BY ENV-WT 500, 600, AND 900

(SEE EXHIBIT 7 – PROJECT NARRATIVE)

Abutters List

Pease Development Authority
c/o Portsmouth Fish Cooperative
1 Peirce Island Road
Portsmouth, NH 03801

EXHIBIT 12

CERTIFIED MAILING RECEIPTS

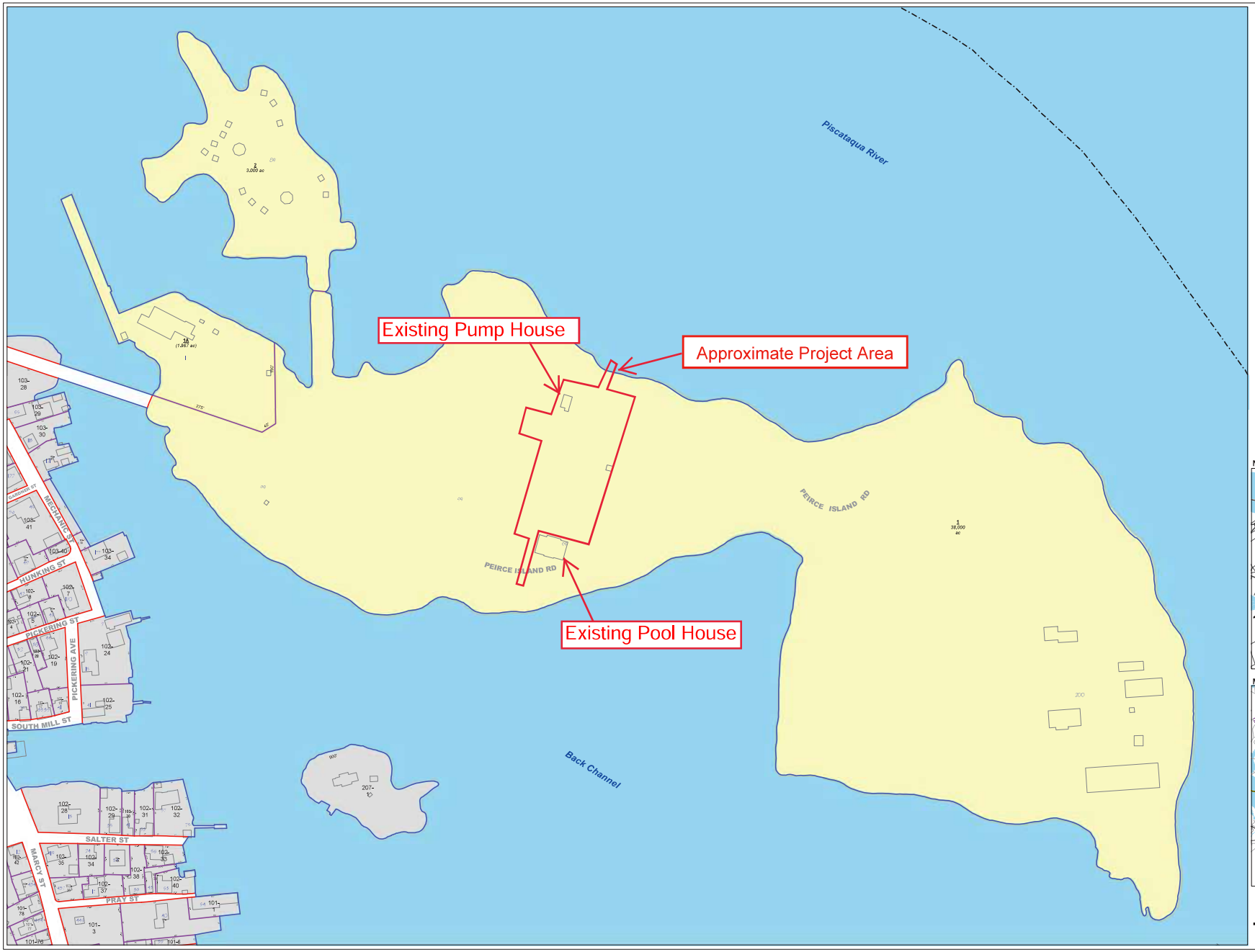
EXHIBIT 13

PROJECT DESIGN CONSIDERATION REQUIRED BY ENV-WT 313

(SEE EXHIBIT 7 - PROJECT NARRATIVE)

EXHIBIT 14

TAX MAP



Partial Legend

See the cover sheet for the complete legend.

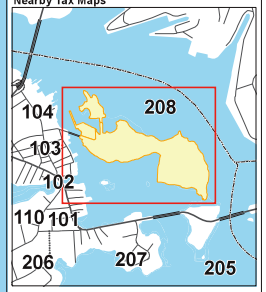
- 7-5A — Lot or lot-unit number
- 2.56 ac — Parcel area in acres (ac) or square feet (sf)
- 29 — Address number
- 233-137 — Parcel number from a neighboring map
- 68' — Parcel line dimension
- SIMS AVE — Street name
- Parcel/Parcel boundary
- Parcel/ROW boundary
- Water boundary
- Structure (1994 data)
- Parcel covered by this map
- Parcel from a neighboring map (see other map for current status)

0 50 100 200 300 Feet

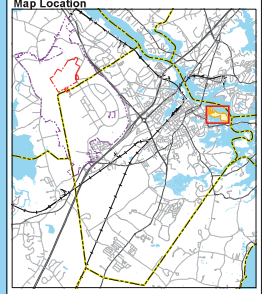
0 20 40 80 Meters

This map is for assessment purposes only. It is not intended for legal description or conveyance.
Parcels are mapped as of April 1.
Building footprints are 2006 data and may not represent current structures.
Streets appearing on this map may be paper (unbuilt) streets.
Lot numbers take precedence over address numbers. Address numbers shown on this map may not represent posted or legal addresses.

Nearby Tax Maps



Map Location



Portsmouth, New Hampshire
2019

Tax Map 208

EXHIBIT 15

PHOTOS OF JURISDICTIONAL AREAS AND SHORELINE STRUCTURES

Photo 1. Low salt marsh off the northwest corner of the pool, viewing southeast. (06-25-21)

Photo 2. Low salt marsh northwest of the pool extending beyond the 100-ft buffer of the project's LOW, view west. (06-25-21)

Photo 3. Gravel shoreline off the north side of Peirce Island public pool, looking east. A portion of the low salt marsh off the northwest corner of the pool is visible in the bottom left portion of the photo. (06-25-21)

Photo 4. Gravel shoreline off the north side of Peirce Island public pool, looking west. Low salt marsh off the northwest corner of the pool is also visible in the background. (06-25-21)

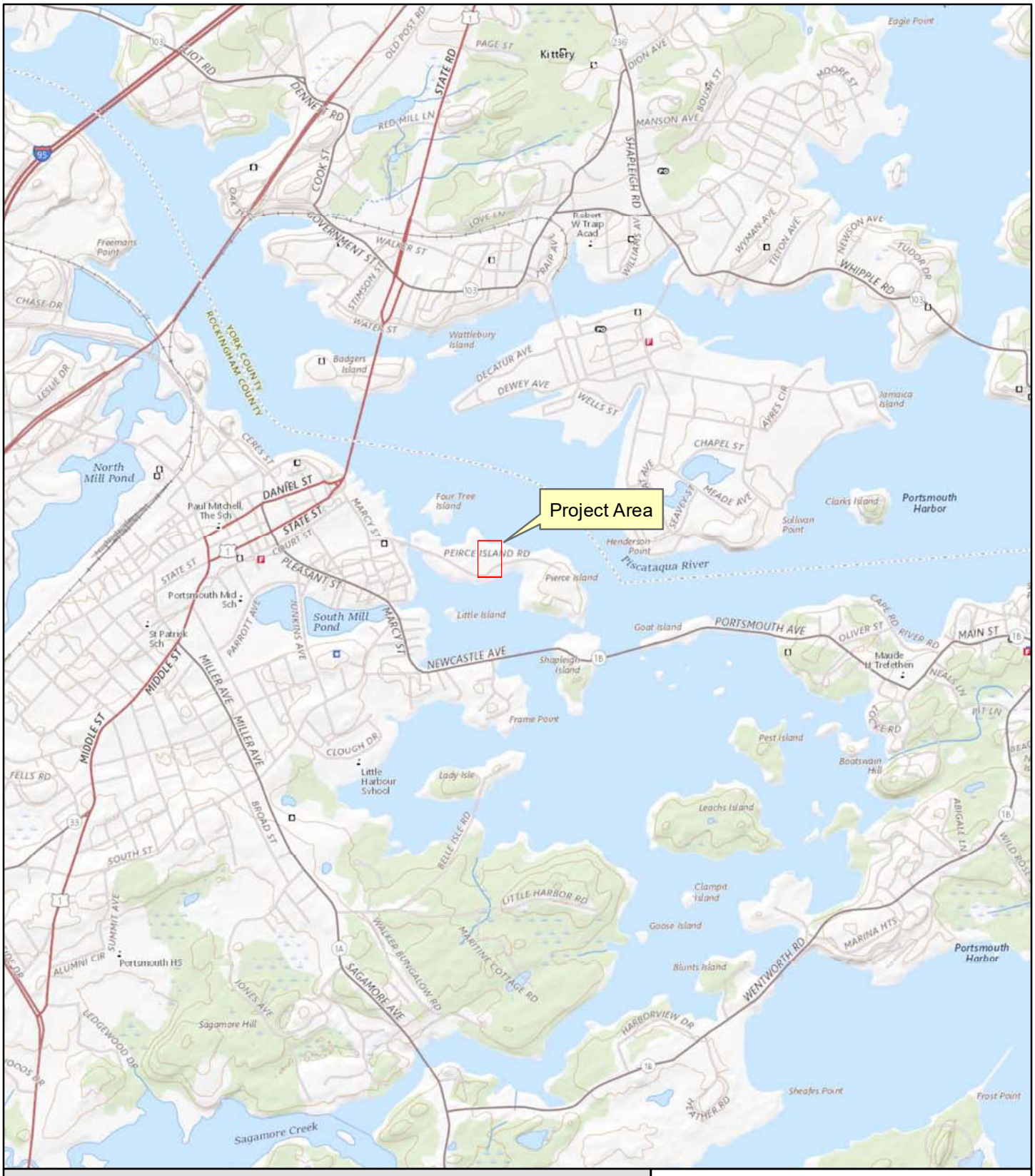
Photo 5. Walking trail along the northside of the pool, looking east. A portion of the freshwater wetland directly west of the existing pump house is visible on the right side of the photo. (06-25-21)

Photo 6. Walking trail along the northside of the pool, looking west. (06-25-21)

Photo 7. Existing sand volleyball court adjacent proposed location for new pump house, viewing south. (06-25-21)

EXHIBIT 16

USGS MAP



Service Layer Credits: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global Ecosystems; U.S. Census Bureau TIGER/Line data; USFS Road Data; Natural Earth Data; U.S. Department of State Humanitarian Information Unit; and NOAA National Centers for Environmental Information, U.S. Coastal Relief Model. Data refreshed December, 2019.

0 550 1,100 2,200 Feet

N

Peirce Island Pool Renovation

Project Locus

NORMANDEAU ASSOCIATES
ENVIRONMENTAL CONSULTANTS

Path: J:\Projects\Portsmouth Wastewater Treatment Facility_Pierce Island\MXD\Permitting2020Locus.mxd

EXHIBIT 17

CONSTRUCTION NARRATIVE

(NARRATIVE OF WORK SEQUENCE, INCLUDING PRE- AND POST-CONSTRUCTION, AND RELATIVE TIMING AND PROGRESSION OF ALL WORK)

Construction Narrative

The proposed renovations of the Peirce Island swimming pool and associated pump house will be made in the fall of 2022 and winter/early spring of 2023, beginning after the pool closes for the season on August 26th. The proposed renovations to the pool and its associated systems will bring a deteriorated public facility up to current health and safety requirements. Prior to the start of work, construction fencing will be erected around the work area and erosion and sediment best management practices will be installed (see Erosion BMPs, Exhibit 5, Sheets CG101 and C-501). The pool's existing concrete decking, vinyl liner, gutter system and associated supply and return piping, and existing stormwater drainage system on the east side of the pool will all be removed. Replacement of these components will be with in-kind materials in the same configuration as existing conditions, begin at the lowest point of the system with the stormwater drainage system and progressing upward. The existing underground surge tank will also be removed and replaced with a larger tank to be installed in a new location adjacent the proposed new location for the pool pump house. The existing pump house building will be demolished, and all associated piping and portions of the surrounding decking removed. The new pump house will be constructed south of the current location outside of the tidal buffer zone and a new stormwater drainage system to collect the runoff from the new pump house roof, adjacent walkways, and lawn area will be constructed. Most of the existing pump house and surrounding decking footprint will be converted to grass turf graded to direct drainage to one of the catch basins to be installed as part of this new stormwater drainage system. The new drainage system will convey flow via a 12-inch high density polyethylene (HDPE) pipe that will outlet at an elevation of 3.90 ft NAVD88 onto the rocky shore along the Piscataqua River off the north side of the swimming pool.

Most of the new stormwater drainage system construction will occur within the main portion of the project area in the tidal buffer zone, within the perimeter of the erosion and sediment BMPs installed prior to the start of work. Construction system outfall between the last downstream drainage basin and the pipe outlet on the rocky shore will be completed in one workday during dry weather and low tidal conditions. Installation of the outlet will be done via a 3-ft x 3-ft trench excavation extending from the main portion of the project area across the existing walking trail and vegetation buffer north of the pool and rip rap bank below. A 125 sf stone rip rap apron will be constructed on the rocky shore at the outlet for erosion protection purposes. Prior to the start of trench excavation, erosion and sediment best management practices will be installed (see Erosion BMPs, Exhibit 5, Sheets CG101, C-501, and C-504 Detail 2) and will be removed following stabilization by the end of the work day. The disturbed rip rap on the bank slope will be reinstalled and the top of bank will be seeded and stabilized with erosion control blanket prior to the end of the workday.

The construction period for all these renovations is expected to take 9 months. All erosion and sedimentation controls will remain in place until the vegetation in lawn areas surrounding the pool and the disturbed vegetation buffer along the walking trail north of the pool is established (at least 75% cover). The new stormwater drainage system will also be monitored during this time to confirm the system is functioning properly.

EXHIBIT 18/19

COPY OF DEED

line in the County of Norfolk, Elizabeth W. Macmahon, otherwise known as Elizabeth W. Macmahon of Boston in the County of Suffolk and Ann B. Pratt, otherwise known as Annie B. Pratt, of Hingham in the County of Plymouth, all in the Commonwealth of Massachusetts, for and in consideration of the sum of one dollar and other valuable considerations, to us in hand before the delivery hereof, well and truly paid by the City of Portsmouth, a municipal Corporation located in the County of Rockingham and State of New Hampshire, the receipt whereof we do hereby acknowledge, have granted, bargained and sold and by these presents do give, grant, bargain, sell, alien, enfeoff, convey and confirm unto the said City of Portsmouth, its successors or assigns forever, the following described tracts of land with the building thereon, and all rights and privileges appurtenant and belonging thereto, situate in the said City of Portsmouth, and bounded and described as follows, to wit:

Warrantee Deed
Peirce et al
to
City of Portsmouth
Del. to
J. D. Sullivan

The Island situated in Piscataqua River, within the limits of the said City of Portsmouth, with the buildings thereon, containing twenty-seven acres, more or less, known as Peirce's Island and formerly known as Partridge's Island and Jaurrin's Island, together with the flats adjoining to the same; being the same premises devised by Joshua W. Peirce to Joseph W. Peirce by will executed July 22, 1859 and allowed by the Court of Probate, May 12, 1876, and devised by the said Joseph W. Peirce by will executed June 4, 1910 and proven and allowed March 7, 1916, to the Grantors herein as residuary legatees; also,

A certain tract or parcel of land with the buildings thereon, situate on Mechanic Street in said Portsmouth, and bounded and described as follows, to wit, — Beginning at the northwesterly corner of land now or formerly of Addie A. Curtis and Mechanic Street, and running in a northerly direction along said Mechanic Street, one hundred forty-six feet, two inches, (146.2) to land now or formerly of John C. Beasley; thence turning and running in an easterly direction along land of said Beasley, thirty (30), feet more or less to the Piscataqua River; thence turning and running in a southerly direction along said River, one hundred forty-five feet six inches (145.6) to land of the said Addie A. Curtis; thence turning and running in a westerly direction, along land of the said Curtis, sixteen (16), feet, to the point begun at. Said tract containing three thousand twelve square feet, more or less, and being the premises described as being Lot #63 on Plan #7 of the "Plan of the City of Portsmouth" on file at the Assessor's Office in said City; also

All rights, privileges and grants vested in the grantors or their devisors or grantors by the State of New Hampshire, authorizing and permitting the construction of a bridge from the Southerly part of said City of Portsmouth to Peirce's Island hereinbefore referred to.

To Have And To Hold the said granted premises, with all the privileges and appurtenances to the same belonging, to it the

lawful owners of the said premises and were seized and possessed thereof in our own right in fee simple; and have full power and lawful authority to grant and convey the same in manner aforesaid; and that we will and our heirs, executors and administrators shall and will Warrant And Defend the same to the said City of Portsmouth and its successors and assigns against the lawful claims and demands of any person or persons whomsoever.

And we, Sara L. Peirce, wife of the said Joseph B. Peirce, Charles C., husband of the said Elisabeth W. Macmahon and C. Barton, husband of the said Ann B. Pratt, for the consideration aforesaid, do hereby relinquish our respective rights of dower and curtesy in the before mentioned premises.

In Witness Whereof, we have hereunto set our hands and seals this 9th day of August in the year of our Lord, one thousand nine hundred and twenty-three.

Signed, sealed and delivered in the presence of us

Chas. N. Baxter — witness to all

Joseph B. Peirce (L.S.)
Sara L. Peirce (L.S.)
Elisabeth W. Macmahon (L.S.)
Charles C. Macmahon (L.S.)
Anne B. Pratt (L.S.)
C. Barton Pratt (L.S.)

Commonwealth of Massachusetts,
Norfolk ss. August 9th 1923.

Personally appeared the above named Joseph B. and Sara L. Peirce and acknowledged the foregoing instrument to be their voluntary act and deed,

Before me,

Chas N. Baxter
Notary Public (—)
Justice of the Peace
My Commission expires June 11/1927.

Commonwealth of Massachusetts,
Suffolk ss. August 9th. 1923.

Personally appeared the above named Elisabeth W. Macmahon and Charles C. Macmahon and acknowledged the foregoing instrument to be their voluntary act and deed.

Before me.

Chas N. Baxter
Justice of the Peace

Commonwealth of Massachusetts, Plymouth ss. August 9th. 1923.

Personally appeared the above named Ann B. and C. Barton Pratt and acknowledged the foregoing instrument to be their voluntary act and deed, Before me,

EXHIBIT 20

NHB CORRESPONDENCE

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Elizabeth Olliver, Normandeau Associates, Inc.
25 Nashua Road
Bedford, NH 03110

From: Amy Lamb, NH Natural Heritage Bureau
Date: 4/6/2021 (valid until 04/06/2022)
Re: Review by NH Natural Heritage Bureau
Permits: NHDES - Wetland Standard Dredge & Fill - Major

NHB ID: NHB21-1136 Town: Portsmouth Location: 200 Peirce Island Road
Description: Replace failed sewer force mains from western bridge abutment to WWTF, and water main to swimming pool. Work will include removal of 1 existing sewer force main, burial of 2 new force mains in its place, and abandoning a second force main in place . The existing lines hung under Peirce Island Road Bridge will be slip lined to ensure integrity. All work will be confined to the existing footprint - a mix of in-road, and off road. Work is an amendment to NHB13-3237 and NHB15-1528, and NHB20-1059.

cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments NHB: Please confirm that all shoreline impact areas have been surveyed for marsh elder, and that the conditions on the attached 2016 memo are still valid. Please send the final plan for the proposed plantings discussed in relation to the NHB20-1059 project segment. The eelgrass record, newly added to the NHB database, was included for your information.
F&G: Please contact the NHFG Marine Division to address impacts to Atlantic and Shortnose Sturgeon and anadromous fish species. Please contact Mike Dionne or Cheri Patterson at (603) 868-1095.

Natural Community	State[1]	Federal	Notes
Eelgrass bed	--	--	

Plant species	State[1]	Federal	Notes
marsh elder (*Iva frutescens*)	T	--	Threats are primarily alterations to the hydrology of the wetland, such as ditching or tidal restrictions that might affect the sheet flow of tidal waters across the intertidal flat, activities that eliminate plants, and increased input of nutrients and pollutants in storm runoff.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

Vertebrate species	State[1]	Federal	Notes
Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)	T	T	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (see below).
Shortnose Sturgeon (*Acipenser brevirostrum*)	E	E	Contact the NH Fish & Game Dept and the US Fish & Wildlife Service (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

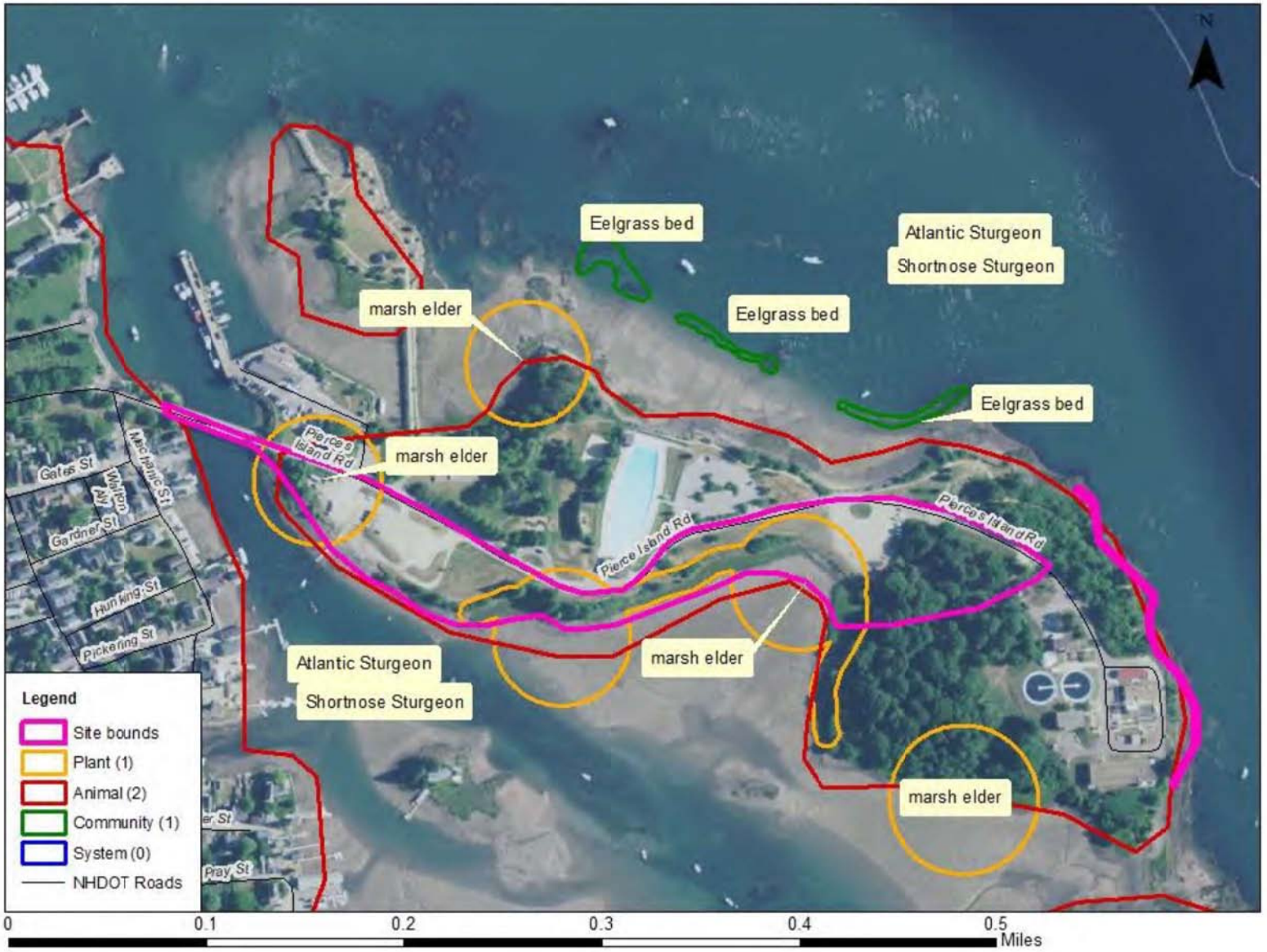
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB21-1136



New Hampshire Natural Heritage Bureau - Community Record

Eelgrass bed

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Not ranked (need more information)
State:	Not listed	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2017: 174.6 acres of eelgrass bed mapped over 90 individual patches.
General Area: 2017: In permanently inundated tidal waters from Little Bay down to the mouth of Portsmouth Harbor. Often occurred with macroalgae.
General Comments: 2017: Data derived from report on annual mapping of eelgrass extent in the Great Bay estuary.
Management Comments: --

Location

Survey Site Name: Piscataqua River
Managed By:

County:
Town(s): Out-Of-State
Size: 183.6 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2017: Eelgrass beds in portions of Portsmouth Harbor, the Piscataqua River, and Little Bay. Includes areas in Maine state waters.

Dates documented

First reported: 2017 Last reported: 2017

New Hampshire Natural Heritage Bureau - Plant Record

marsh elder (*Iva frutescens*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Demonstrably widespread, abundant, and secure
State:	Listed Threatened	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Excellent quality, condition and landscape context ('A' on a scale of A-D).
Comments on Rank:	This rank may be for the state rather than relative to others in the region.
Detailed Description:	2020: Tidal Pool: Species observed in flower. 2017: Leachs Island: Several thousand plants spread along 800+ feet of shoreline. 10-20% dieback, 10-15% yellowing, 65-80% normal to vigorous. Aphids observed on 80% of clumps. 2016: Peirce Island: Additional subpopulations located, raising total number of plants to over 600. Plants appear to be in much better health than 2014, with all individuals in fruit and in good vigor. Shaws Hill: Several clumps over an area approximately 30 x 15 feet. Estimated at over 200 individuals. Tidal Pool: Plants in 3 areas along shoreline near tidal pool. 2014 Peirce Island: Over 500 plants were observed, all stunted, with approximately 50-60% dead stems, mostly confined to the upper portions of the plants. 1996: Constant observation since 1953 reported, including all stages of phenology and age structure. 1982: Good clump observed.
General Area:	2017: Leachs Island: Upper edge of brackish marsh/rocky shore. Plants absent from areas with broader expanse of marsh. Rocks present in most areas where the plants are growing. Associated species include black oak (*Quercus velutina*), saltmarsh rush (*Juncus gerardii*), sea-blite (*Suaeda* sp.), hastate-leaved orache (*Atriplex* cf. *prostrata*), smooth cordgrass (*Spartina alterniflora*), Carolina sea-lavender (*Limonium carolinianum*), and seaside plantain (*Plantago maritima* ssp. *juncoides*). 2016: Peirce Island: Population forms a narrow band immediately above the highest observed wrack line along the shore. Associated upland species include staghorn sumac (*Rhus hirta*), autumn-olive (*Elaeagnus umbellata* var. *parvifolia*), Asian bittersweet (*Celastrus orbiculatus*), and speckled alder (*Alnus incana* ssp. *rugosa*). The saline areas downslope of the marsh elder contained over 50% unvegetated substrate, as well as a mixture of cordgrass (*Spartina* sp.) and saltgrass (*Distichlis spicata*). Shaws Hill: Surrounding land use is developed. All plants below highest observable tide line in ***high salt marsh***, located among saltmeadow cordgrass (*Spartina patens*), smooth cordgrass (*Spartina alterniflora*), and seaside goldenrod (*Solidago sempervirens*). Tidal Pool: Sagamore Creek/Great Bay shoreline, with smooth cordgrass (*Spartina alterniflora*), saltmarsh rush (*Juncus gerardii*), saltmeadow cordgrass (*Spartina patens*), seaside goldenrod (*Solidago sempervirens*), and sea-blite (*Suaeda* spp.). 1996: On shores of several islands and peninsulas in the more or less enclosed bay system. Associated plant species: *Solidago sempervirens* (seaside goldenrod), *Juncus gerardii* (salt marsh rush), *Spartina patens* (salt-meadow cord-grass), *Triglochin maritimum* (arrow-grass), *Elymus virginicus* (Virginia wild rye), *Atriplex patula* (narrow-leaved orach), and *Artemisia vulgaris* (common mugwort). Substrate: gravel and marsh peat and muck. 1982: On shore at Pleasant Point.
General Comments:	2016: Peirce Island: "The population currently appears to be in good health, although the results of the June 2014 surveys indicated that there may be some intermittent pressure on this population. The propensity of this species to grow in a very narrow band along the tide line does not allow for rapid adaptation to changing sea levels, storm events, or polluted runoff that a larger, robust population may resist. If sea levels gradually rise as expected, the marsh elder will be unable to move inland due to a small but steep cut bank that forms the upland break adjacent to the marsh elder population. The remaining subpopulations may also be getting shaded by the adjacent upland vegetation, which appears to be encroaching on the shoreline. This vegetation is comprised of large shrub species and the invasive Oriental bittersweet that is capable of overtaking the native plants in the area."
Management Comments:	--

CONFIDENTIAL – NH Dept. of Environmental Services review

Location

Survey Site Name: Little Harbor, back channel
Managed By: Little Harbor Trust

County: Rockingham
Town(s): Portsmouth
Size: 59.9 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2017: Leachs Island: Island in New Castle only accessible by boat. Plants observed on south shore of island 2016: Peirce Island: Along the southern shore of Peirce Island, along the edge of a small cove west of the wastewater treatment facility. Shaws Hill: Take Laurel Lane off New Castle Avenue, bear left onto driveway right-of-way servicing 51A and 51B Laurel Lane. At end of right-of-way, 51B will be located on the right. Tidal Pool: Along Sagamore Creek shoreline on Creek Farm Reservation property in Portsmouth. In the vicinity of Rte. 1B which encircles the Little Harbor back channel from Portsmouth to New Castle and Rye. Many of the sites are visible only by boat.

Dates documented

First reported: 1953 Last reported: 2020-08-02

New Hampshire Natural Heritage Bureau - Animal Record

Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*)

Legal Status		**Conservation Status**	
Federal:	Listed Threatened	Global:	Rare or uncommon
State:	Listed Threatened	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Not ranked
Comments on Rank:	--
Detailed Description:	2016: 1 individual, sex unknown, detected in the lower Piscataqua River. 2015: 1 individual, sex unknown, detected in Portsmouth Harbor. 2012: 1 individual, sex unknown, detected in Little Bay.
General Area:	2016: Tidal waters in Portsmouth Harbor, Little Bay, and the Piscataqua River.
General Comments:	--
Management Comments:	--

Location

Survey Site Name: Piscataqua River
Managed By:

County:
Town(s): Out-Of-State
Size: 7749.3 acres Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: 2016: Tidal waters of Portsmouth Harbor, Little Bay, and the Piscataqua River.

Dates documented

First reported:	2012-06-02	Last reported:	2016-05-27

The U.S. Fish & Wildlife Service has jurisdiction over Federally listed species. Please contact them at 70 Commercial Street, Suite 300, Concord NH 03301 or at (603) 223-2541.

New Hampshire Natural Heritage Bureau - Animal Record

Shortnose Sturgeon (*Acipenser brevirostrum*)

Legal Status	Conservation Status
Federal: Listed Endangered	Global: Rare or uncommon
State: Listed Endangered	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2016: 2 individuals, 1 female and 1 sex unknown, detected in Portsmouth Harbor and the lower Piscataqua River. 2015: 3 females and 2 other individuals, sex unknown detected in Portsmouth Harbor. 2014: 1 female detected moving from Portsmouth Harbor up the Piscataqua River to the mouth of the Cocheco River. 2012: 1 female detected in Little Bay. 2011: 1 female detected in Little Bay. 2010: 1 female detected in Little Bay.
General Area: 2016: Tidal waters in Portsmouth Harbor, Little Bay, and the Piscataqua River.
General Comments: --
Management Comments: --

Location

Survey Site Name: Piscataqua River
Managed By:

County:
Town(s): Out-Of-State
Size: 7749.3 acres Elevation:

Precision: Within 1.5 miles of the area indicated on the map (location information is vague or uncertain).

Directions: 2016: Tidal waters of Portsmouth Harbor, Little Bay, and the Piscataqua River.

Dates documented

First reported: 2010-11-03 Last reported: 2016-10-20

The U.S. Fish & Wildlife Service has jurisdiction over Federally listed species. Please contact them at 70 Commercial Street, Suite 300, Concord NH 03301 or at (603) 223-2541.

EXHIBIT 21

CONSERVATION COMISSION CORRESPONDENCE

Conservation Commission Correspondence

Re-presentation of the Wetland Standard Dredge & Fill application for the project to the Portsmouth Conservation Commission is planned during the August 10th, 2022 Conservation Commission meeting following a continuance issued during the July 13th meeting.

EXHIBIT 22

FEDERAL AGENCY CORRESPONDENCE

Federal Agency Correspondence

While the new stormwater outlet proposed off the north side of Peirce Island pool will be located below the highest observable tide line (HOTL), the outlet will be located above the mean high water elevation. The outlet and associated rip rap apron will not extend out from the existing shoreline a sufficient distance to effect boating and the stormwater discharge from the outlet into the Piscataqua River will be relatively small. No other federal or cultural resources are directly or indirectly impacted by this project, therefore no federal agency review is anticipated.

EXHIBIT 23

AVOIDANCE AND MINIMIZATION NARRATIVE

AVOIDANCE AND MINIMIZATION WRITTEN NARRATIVE

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.04(j); Env-Wt 311.07; Env-Wt 313.01(a)(1)b; Env-Wt 313.01(c)

APPLICANT'S NAME: **Terry Demarais, PE, City of Portsmouth** **TOWN NAME:** **Portsmouth**

An applicant for a standard permit shall submit with the permit application a written narrative that explains how all impacts to functions and values of all jurisdictional areas have been avoided and minimized to the maximum extent practicable. This attachment can be used to guide the narrative (attach additional pages if needed). Alternatively, the applicant may attach a completed Avoidance and Minimization Checklist (NHDES-W-06-050) to the permit application.

SECTION 1 - WATER ACCESS STRUCTURES (Env-Wt 311.07(b)(1))

Is the primary purpose of the proposed project to construct a water access structure?

The primary purpose of this project does not involve a water access structure.

SECTION 2 - BUILDABLE LOT (Env-Wt 311.07(b)(1))

Does the proposed project require access through wetlands to reach a buildable lot or portion thereof?

The proposed project does not require access through wetlands to reach a buildable lot.

SECTION 3 - AVAILABLE PROPERTY (Env-Wt 311.07(b)(2))*

For any project that proposes permanent impacts of more than one acre, or that proposes permanent impacts to a PRA, or both, are any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, that could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs?

**Except as provided in any project-specific criteria and except for NH Department of Transportation projects that qualify for a categorical exclusion under the National Environmental Policy Act.*

The proposed project has impacts to the previously developed tidal buffer zone, protected shoreland, and a small portion of rocky shore. The project is intended to provide renovations necessary to bring the long standing and highly utilized public outdoor swimming pool up to current health and safety requirements and provide additional stormwater management for the area.

SECTION 4 - ALTERNATIVES (Env-Wt 311.07(b)(3))

Could alternative designs or techniques, such as different layouts, different construction sequencing, or alternative technologies be used to avoid impacts to jurisdictional areas or their functions and values as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization?

The proposed project includes demolition of the existing pump house building, construction of a new pump house building in a new location with a larger surge tank to be installed directly adjacent, and installation of a new stormwater drainage system. Existing structural damage and the requirements of the new pool infiltration system necessitate the demolition rather than renovation of the existing pump house. Facility needs of the pool require the new pump house location be in the immediate vicinity of the pool with is entirely within the 100-year flood zone. However, new the pump house will be located outside the tidal buffer zone and constructed with its finished floor elevated two feet above the 100-year flood level to protect the building systems form potential flood events and account for future sea level rise. Facility needs also require the new underground surge tank be of a greater size than the one existing, to be installed directly adjacent the new pump house location. The installation of a new stormwater drainage system associated with the new pump house and surrounding walkways and lawn area will result in a net improvement to existing conditions by providing stormwater management for the western side of the pool, which was previously absent. Limited existing topographic relief necessitates the new system drain to an outlet off the north side of the pool rather than connecting with the existing drainage system on the eastern side of the pool. The proposed outlet position meets the hydraulic needs of the system while avoiding the salt marsh northwest of the pool as much as practicable. All other proposed renovations of the pool systems and decking are in situ with in-kind materials.

SECTION 5 - CONFORMANCE WITH Env-Wt 311.10(c) (Env-Wt 311.07(b)(4))**

How does the project conform to Env-Wt 311.10(c)?

***Except for projects solely limited to construction or modification of non-tidal shoreline structures only need to complete relevant sections of Attachment A.*

The stormwater outlet has been sited at the maximum practicable distance from the salt marsh off the northwestern corner of pool while meeting the hydraulic needs of the drainage system. The conversion of the existing pump house building and portions of surrouding decking to lawn will result in an increase of previous surface within the tidal buffer zone. The other pool renovations within the tidal buffer zone will consist of in-kind replacement at pre-existing locations of necessary pool infrastructure.

EXHIBIT 25

COASTAL RESOURCE WORKSHEET AS REQUIRED BY ENV-WT 600

(ALSO SEE EXHIBIT 7 – PROJECT NARRATIVE)

COASTAL RESOURCE WORKSHEET

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A/ Env-Wt 600

APPLICANT LAST NAME, FIRST NAME, M.I.: Desmarais, Terry, PE, City of Portsmouth

This worksheet may be used to present the information required for projects in coastal areas, in addition to the information required for Lower-Scrutiny Approvals, Expedited Permits, and Standard Permits under Env-Wt 603.01.

Please refer to Env-Wt 605.03 for impacts requiring compensatory mitigation.

SECTION 1 - REQUIRED INFORMATION (Env-Wt 603.02; Env-Wt 603.06; Env-Wt 603.09)

The following information is required for projects in coastal areas.

Describe the purpose of the proposed project, including the overall goal of the project, the core project purpose consisting of a concise description of the facilities and work that could impact jurisdictional areas, and the intended project outcome. Specifically identify all natural resource assets in the area proposed to be impacted and include maps created through a data screening in accordance with Env-Wt 603.03 (refer to Section 2) and Env-Wt 603.04 (refer to Section 3) as attachments.

The City of Portsmouth is proposing a renovation of the Peirce Island swimming pool and associated pump house and systems on Peirce Island Road to bring a highly utilized, but deteriorated public facility up to current health and safety requirements. These renovations include replacement of the pool's existing vinyl liner, pool gutter, underground surge tank, concrete pool deck, pump house, and existing stormwater drainage system on the east side of the pool. The pump house will be relocated at a position outside of the tidal buffer zone and its finished floor elevated two feet above the 100-ft flood zone elevation to protect the building and pool systems in the building from potential flood events and to account for future sea level rise. A new stormwater drainage system will also be constructed to collect runoff from the new pump house roof, adjacent walkway, and surrounding lawn area and will outlet to the Piscataqua River off the north side of the pool. The pipe outlet will be located at an elevation of 3.90 ft NAVD88 between the HOTL and the mean high water elevation and a rip rap apron will be constructed for erosion protection at the outlet. The approximately a third of the total project impacts lies within the Tidal Buffer Zone (TBZ).

The specifics of the project and a detailed description of the Tidal Buffer Zone and surrounding natural resources are included in Exhibit 7 - Project Narrative.

For standard permit projects, provide:

☒ A Coastal Functional Assessment (CFA) report in accordance with Env-Wt 603.04 (refer to Section 3).

☒ A vulnerability assessment in accordance with Env-Wt 603.05 (refer to Section 4).

Explain all recommended methods and other considerations to protect the natural resource assets during and as a result of project construction in accordance with Env-Wt 311.07, Env-Wt 313, and Env-Wt 603.04.

Approximately a third of the total project impacts will occurr within the previously tidal buffer zone with a small amount of permanent impact to rocky shore below the highest observable tide line and the remainder occurring within the protected shoreland upslope. No other impacts to tidal wetlands or waters, including salt marshes or Iva frutescens (a NH Threatened species) are anticipated. The section of existing walking trail and adjacent vegetated buffer north of the pool to be impacted during installation of the the stormwater drainage system outlet will be restored to maintain protection of the pool from high water and wave action during storms.

See additional detail in Exhibit 7 - Project Narrative.

Provide a narrative showing how the project meets the standard conditions in Env-Wt 307 and the approval criteria in Env-Wt 313.01.

The appropriate standard conditions and approval criteria are provided in Exhibit 7 - Project Narrative.

Provide a project design narrative that includes the following:

☒ A discussion of how the proposed project:

- Uses best management practices and standard conditions in Env-Wt 307;
- Meets all avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;
- Meets approval criteria in Env-Wt 313.01;
- Meets evaluation criteria in Env-Wt 313.01(c);
- Meets CFA requirements in Env-Wt 603.04; and
- Considers sea-level rise and potential flooding evaluated pursuant to Env-Wt 603.05;

☒ A construction sequence, erosion/siltation control methods to be used, and a dewatering plan; and

☒ A discussion of how the completed project will be maintained and managed.

Upon completion the project will be maintained as part of the City's Department of Public Works management of lands.

☒ Provide design plans that meet the requirements of Env-Wt 603.07 (refer to Section 5);

☒ Provide water depth supporting information required by Env-Wt 603.08 (refer to Section 6); and

☐ For any major project that proposes to construct a structure in tidal waters/wetlands or to extend an existing structure seaward, provide a statement from the Pease Development Authority Division of Ports and Harbors (DP&H) chief harbormaster, or designee, for the subject location relative to the proposed structure's impact on navigation. If the proposed structure might impede existing public passage along the subject shoreline on foot or by non-motorized watercraft, the applicant shall explain how the impediments have been minimized to the greatest extent practicable.

SECTION 2 - DATA SCREENING (Env-Wt 603.03, in addition to Env-Wt 306.05)

Please use the Wetland Permit Planning Tool, or any other database or source, to indicate the presence of:

☒ Existing salt marsh and salt marsh migration pathways;

☒ Eelgrass beds;

☒ Documented shellfish sites;

☒ Projected sea-level rise; and

☒ 100-year floodplain.

Conduct data screening as described to identify documented essential fish habitat, and tides and currents that may be impacted by the proposed project, by using the following links:

☒ National Oceanic and Atmospheric Administration (NOAA) Tides & Currents; and

☒ NOAA Essential Fish Habitat Mapper.

☒ Verify or correct the information collected from the data screenings by conducting an on-site assessment of the subject property in accordance with Env-Wt 406 and Env-Wt 603.04.

SECTION 3 - COASTAL FUNCTIONAL ASSESSMENT/ AVOIDANCE AND MINIMIZATION (Env-Wt 603.04; Env-Wt 605.01; Env-Wt 605.02; Env-Wt 605.03)

Projects in coastal areas shall:

☒ Not impair the navigation, recreation, or commerce of the general public; and

☒ Minimize alterations in prevailing currents.

An applicant for a permit for work in or adjacent to tidal waters/wetlands or the tidal buffer zone shall demonstrate that the following have been avoided or minimized as required by Env-Wt 313.04:

☒ Adverse impacts to beach or tidal flat sediment replenishment;

☒ Adverse impacts to the movement of sediments along a shore;

☒ Adverse impacts on a tidal wetland's ability to dissipate wave energy and storm surge; and

☒ Adverse impacts of project runoff on salinity levels in tidal environments.

For standard permit applications submitted for minor or major projects:

☒ Attach a CFA based on the data screening information and on-site evaluation required by Env-Wt 603.03. The CFA for tidal wetlands or tidal waters shall be:

- Performed by a qualified coastal professional; and
- Completed using one of the following methods:

  a. The US Army Corps of Engineers (USACE) Highway Methodology Workbook, dated 1993, together with the USACE New England District *Highway Methodology Workbook Supplement*, dated 1999; or

  b. An alternative scientifically-supported method with cited reference and the reasons for the alternative method substantiated.

For any project that would impact tidal wetlands, tidal waters, or associated sand dunes, the applicant shall:

☒ Use the results of the CFA to select the location of the proposed project having the least impact to tidal wetlands, tidal waters, or associated sand dunes;

☒ Design the proposed project to have the least impact to tidal wetlands, tidal waters, or associated sand dunes;

☒ Where impact to wetland and other coastal resource functions is unavoidable, limit the project impacts to the least valuable functions, avoiding and minimizing impact to the highest and most valuable functions; and

☒ Include on-site minimization measures and construction management practices to protect coastal resource areas.

Projects in coastal areas shall use results of this CFA to:

☒ Minimize adverse impacts to finfish, shellfish, crustacean, and wildlife;

☒ Minimize disturbances to groundwater and surface water flow;

☒ Avoid impacts that could adversely affect fish habitat, wildlife habitat, or both; and

☒ Avoid impacts that might cause erosion to shoreline properties.

SECTION 4 - VULNERABILITY ASSESSMENT (Env-Wt 603.05)

Refer to the New Hampshire Coastal Flood Risk Summary Part 1: Science and New Hampshire Coastal Flood Risk Summary Part II: Guidance for Using Scientific Projections or other best available science to:

Determine the time period over which the project is designed to serve.

The expected lifespan of the renovated pool systems and pump house building is 40 years.

Identify the project's relative risk tolerance to flooding and potential damage or loss likely to result from flooding to buildings, infrastructure, salt marshes, sand dunes and other valuable coastal resource areas.

The proposed pump house and pool systems within it have a low risk tolerance as these systems will not tolerate flooding. Thus, the finished floor of the pump house will be elevated two feet above the 100-year flood zone elevation to reduce the chance of flooding and account for future sea level rise. The foundation of the building will also be waterproofed and all piping penetrations will have watertight connections.

The existing pool is within the 100-year flood zone has a high probability of being flooded in its expected lifespan, but it and its exterior systems have a high risk tolerance as they are expected to tolerate a flood event with minimal damage. The exterior pool systems bye their nature are submerged under normal operating conditions. All vunerable components are located in the pump house elevated above expected flood elevation. A flood event would likely generate accumulated sediment and debris which would require cleaning of the pool and gutter system.

The new stormwater drainage system has a high risk tolerance as it is expected to be inundated during major flood events with minimal permanent damage. Accumulated sediment from a flood event may require cleaning of the system and the drainage outfall does have a potential for damage due to shoreline erosion during a flood event.

The salt marsh off the northwestern corner of the project have a high risk tolerance since it can survive prolonged flooding by seawater.

Reference the projected sea-level rise (SLR) scenario that most closely matches the end of the project design life and the project's tolerance to risk or loss.

As part of separate project by the City on Peirce Island, an analysis of anticipated sea level rise by 2050, the anticipated lifespan of that project, was performed by a coastal engineer based on the RCP 4.5 project curve. See attached memorandum re "Coastal Resiliency Basis of Design". Based on this analysis, the anticipated 2050 sea level rise at this location is approximately 0.9 feet, based on the RCP 4.5 projection (1.15 feet) and the Corps' intermediate sea level rise projection (0.6 feet).

Use of the UNH project curves provided in the two part report New Hampshire Coastal Flood Risk Summary was not recommended for the previous project design based on their greater divergence from observed data. While the 95% UNH projection curve recommended for design of projects with a medium tolerance for sea level rise estimates 2.1 feet of sea level rise by 2060 (the end of the anticipated 40 year project design life), the above mentioned analysis suggests this estimate is higher than is likely. Thus, the design of the finished floor two feet above the current 100-year flood elevation is considered an appropriately conservative approach.

Identify areas of the proposed project site subject to flooding from SLR.

Nearly the entire work area for the pool renovations lies within the current 100-year flood zone at an elevation of 8 feet NAVD88. Assuming an anticipated 0.9 feet of sea level rise based on this analysis discussed above the project location has a predicted 9.0 foot elevation for RSLR at 2050. After construction of the new pump house, the vulnerable pool systems will be located above this elevation.

Identify areas currently located within the 100-year floodplain and subject to coastal flood risk.

The current FEMA flood map for this site has the 100-year flood elevation at 9 feet NGVD29. The more precise NOAA 100-year flood elevation for 2018 based on tide data is 8.1 feet NAVD88 from the datum for the nearby Seavey Island, Maine (Portsmouth Naval Shipyard). Nearly the entire project footprint lie below elevation 8.1 (see Exhibit 5, Sheet CX101).

Describe how the project design will consider and address the selected SLR scenario within the project design life, including in the design plans.

The project proposes to build the new pump house with a finished floor elevated two feet above the current 100-year flood elevation to protect the building and the pool systems within the flooding and to account for future sea level rise based on the analysis discussed above. The foundation of the building will also be waterproofed and all piping penetrations will have watertight connections.

The pool and its associated exterior systems, as well as the new stormwater drainage system, have a high risk tolerance for flooding. It is anticipated these portions of the project will flood during the course of the design lifespan with minimal damage to the systems requiring minor cleaning out of debris and sediment should flooding occur.

Where there are conflicts between the project's purpose and the vulnerability assessment results, schedule a pre-application meeting with the department to evaluate design alternatives, engineering approaches, and use of the best available science.

☐ Pre-application meeting date held:

SECTION 5 - DESIGN PLANS (Env-Wt 603.07, in addition to Env-Wt 311)

Submit design plans for the project in both plan and elevation views that clearly depict and identify all required elements.

The plan view shall depict the following:

☒ The engineering scale used, which shall be no larger than one inch equals 50 feet;

☒ The location of tidal datum lines depicted as lines with the associated elevation noted, based on North American Vertical Datum of 1988 (NAVD 88), derived from https://tidesandcurrents.noaa.gov/datum_options.html, as described in Section 6.

☒ An imaginary extension of property boundary lines into the waterbody and a 20-foot setback from those property line extensions;

☒ The location of all special aquatic sites at or within 100 feet of the subject property;

☒ Existing bank contours;

☒ The name and license number, if applicable, of each individual responsible for the plan, including:

a. The agent for tidal docking structures who determined elevations represented on plans; and

b. The qualified coastal professional who completed the CFA report and located the identified resources on the plan;

☒ The location and dimensions of all existing and proposed structures and landscape features on the property;

☒ Tidal datum(s) with associated elevations noted, based on NAVD 88; and

☒ Location of all special aquatic sites within 100-feet of the property.

The elevation view shall depict the following:

☒ The nature and slope of the shoreline;

☒ The location and dimensions of all proposed structures, including permanent piers, pilings, float stop structures, ramps, floats, and dolphins; and

☒ Water depths depicted as a line with associated elevation at highest observable tide, mean high tide, and mean low tide, and the date and tide height when the depths were measured. Refer to Section 6 for more instructions regarding water depth supporting information.

See specific design and plan requirements for certain types of coastal projects:

- Overwater structures (Env-Wt 606).
- Dredging activities (Env-Wt 607).
- Tidal shoreline stabilization (Env-Wt 609).
- Protected tidal zone (Env-Wt 610).

- Tidal beach maintenance (Env-Wt 608).
- Sand Dunes (Env-Wt 611).

SECTION 6 - WATER DEPTH SUPPORTING INFORMATION REQUIRED (Env-Wt 603.08)

Using current predicted NOAA tidal datum for the location, and tying field measurements to NAVD 88, field observations of at least three tide events, including at least one minus tide event, shall be located to document the range of the tide in the proposed location showing the following levels:

☒ Mean lower low water;
☒ Mean low water;
☒ Mean high water;
☒ Mean tide level;
☒ Mean higher high water;
☒ Highest observable tide line; and
☒ Predicted sea-level rise as identified in the vulnerability assessment in Env-Wt 603.05.

The following data shall be presented in the application project narrative to support how water depths were determined:

☐ The date, time of day, and weather conditions when water depths were recorded; and
☐ The name and license number of the licensed land surveyor who conducted the field measurements.

For tidal stream crossing projects, provide:

☐ Water depth information to show how the tier 4 stream crossing is designed to meet Env-Wt 904.07(c) and (d).

For repair, rehabilitation or replacement of tier 4 stream crossings:

☐ Demonstrate how the requirements of Env-Wt 904.09 are met.

SECTION 7 - GENERAL CRITERIA FOR TIDAL BEACHES, TIDAL SHORELINE, AND SAND DUNES (Env-Wt 604.01)

Any person proposing a project in or on a tidal beach, tidal shoreline, or sand dune, or any combination thereof, shall evaluate the proposed project based on:

☒ The standard conditions in Env-Wt 307;
☒ The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;
☒ The approval criteria in Env-Wt 313.01;
☒ The evaluation criteria in Env-Wt 313.05;
☒ The project specific criteria in Env-Wt 600;
☒ The CFA required by Env-Wt 603.04; and
☒ The vulnerability assessment required by Env-Wt 603.05.

New permanent impacts to sand dunes that provide coastal storm surge protection for protected species or habitat shall not be allowed except:

☐ To protect public safety; and
☐ Only if constructed by a state agency, coastal resiliency project, or for a federal homeland security project.

Projects in or on a tidal beach, tidal shoreline, or sand dune shall support integrated shoreline management that:

☐ Optimizes the natural function of the shoreline, including protection or restoration of habitat, water quality, and self-sustaining stability to flooding and storm surge; and

☐ Protects upland infrastructure from coastal hazards with a preference for living shorelines over hardened shoreline practices.

SECTION 8 - GENERAL CRITERIA FOR TIDAL BUFFER ZONES (Env-Wt 604.02)

The 100-foot statutory limit on the extent of the tidal buffer zone shall be measured horizontally. Any person proposing a project in or on an undeveloped tidal buffer zone shall evaluate the proposed project based on:

☒ The standard conditions in Env-Wt 307;

☒ The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;

☒ The approval criteria in Env-Wt 313.01;

☒ The evaluation criteria in Env-Wt 313.05;

☒ The project specific criteria in Env-Wt 600;

☒ The CFA required by Env-Wt 603.04; and

☒ The vulnerability assessment required by Env-Wt 603.05.

Projects in or on a tidal buffer zone shall preserve the self-sustaining ability of the buffer area to:

☒ Provide habitat values;

☒ Protect tidal environments from potential sources of pollution;

☒ Provide stability of the coastal shoreline; and

☒ Maintain existing buffers intact where the lot has disturbed area defined under RSA 483-B:4, IV.

SECTION 9 - GENERAL CRITERIA FOR TIDAL WATERS/WETLANDS (Env-Wt 604.03)

Except as allowed under Env-Wt 606, permanent new impacts to tidal wetlands shall be allowed only to protect public safety or homeland security. Evaluation of impacts to tidal wetlands and tidal waters shall be based on:

☒ The standard conditions in Env-Wt 307;

☒ The avoidance and minimization requirements in Env-Wt 311.07 and Env-Wt 313.03;

☒ The approval criteria in Env-Wt 313.01;

☒ The evaluation criteria in Env-Wt 313.05;

☒ The project specific criteria in Env-Wt 600;

☒ The CFA required by Env-Wt 603.04; and

☒ The vulnerability assessment required by Env-Wt 603.05.

Projects in tidal surface waters or tidal wetlands shall:

☒ Optimize the natural function of the tidal wetland, including protection or restoration of habitat, water quality, and self-sustaining stability to storm surge;

☒ Be designed with a preference for living shorelines over hardened stabilization practices; and

☒ Be limited to public infrastructure or restoration projects that are in the interest of the general public, including a road, a bridge, energy infrastructure, or a project that addresses predicted sea-level rise and coastal flood risk.

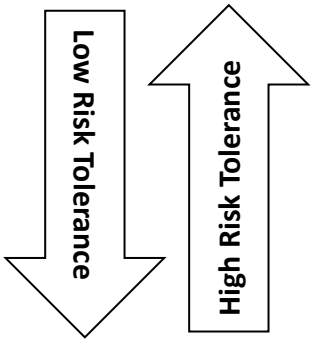
SECTION 10 – GUIDANCE

Your application must follow the New Hampshire Coastal Risk and Hazards Commission's Guiding Principles or other best available science. Below are some of these guidance principles:

- Incorporate science-based coastal flood risk projections into planning;
- Apply risk tolerance* to assessment, planning, design, and construction;
- Protect natural resources and public access;
- Create a bold vision, start immediately, and respond incrementally and opportunistically as projected coastal flood risks increase over time; and
- Consider the full suite of actions including effectiveness and consequences of actions.

*Risk tolerance is a project's willingness to accept a higher or lower probability of flooding impacts. The diagram below gives examples of project with lower and higher risk tolerance:

Critical infrastructures, historic sites, essential ecosystems, and high value assets typically have lower risk tolerance, and thus should be planned, designed, and constructed using higher coastal flood risk projections.



Sheds, pathways, and small docks typically have higher risk tolerance and thus may be planned, designed, and constructed using less protective coastal flood risk projections.

CIVILWORKS NEW ENGLAND

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MEMORANDUM

Date: February 12, 2021

To: Eric Weinrieb, PE

Altus Engineering, Inc.

From: Duncan Mellor, PE
Principal Coastal Engineer

Re: Peirce Island WWTF Access Road Coastal Resiliency Basis of Design

The wastewater treatment facility (WWTF) access road crosses a low area on Peirce Island before rising to the higher elevation of the treatment plant. The access road here is proposed to be raised to maintain facility access during storm surges and in anticipation of sea level rise over time. This low area section of road is adjacent to the main Piscataqua channel with a wind wave fetch of 3,000' from Badgers Island.

WAVE CONDITIONS:

A typical engineering design code for wind criteria is a reference by the American Society of Civil Engineers, ASCE 7-10, which includes maps showing design wind speed (3 second gust, 7% probability of exceedance in 50 years) in the US. This design wind speed when used for wave generation is reduced to remove the added load factor and adjusted down to fit the minimum wind duration to grow these waves to fully developed waves for the wind fetch and water depth. Transforming the wave into shore/shallows gives a 2.6' breaking wave (far in excess of limits for vegetated shoreline). For riprap sizing the W_{50} mean size is 170# (about 1.2' dimension), based on a 2:1 slope. Minimum toe stone size is 230# (about 1.5' size). From a public safety, walking on the rocks standpoint, larger stone is generally more stable when properly set.

Per the NOAA Seavey Island extreme tides data (surge without wave action), the 100-yr flood level is EL 8.1' NAVD88 for 2018 (latest data), which does match the FEMA AE zone elevation of EL 8' NAVD88. With a surge and wave action you may still get some waves washing over the road with wave runup to EL 10.2' with no future sea level rise allowance.

As the wave fetch from Badger's Island would be a northwesterly wind, this design wave condition might not occur during extreme storm surges in a Northeaster or hurricane.

Design guides for alternative road edge wave erosion protection included *Living Shorelines: The Science and Management of Nature-Based Coastal Protection*[1]. Chapter 11 discusses living/planted shoreline design, and multiple cited references indicate a maximum wave height for salt marsh without toe stone berm armoring, is about a 1 foot wave. As the site design wave condition significantly exceed 1 foot, and wave breaking on the shore is expected, some level of stone armoring is needed to ensure that access to the WWTF survives storm conditions.

The State of New Jersey has a well written living shoreline guideline[2] that provides recommended sill stone sizes as a function of wind fetch length (design wind speed and duration not mentioned). For this site with a 0.6 mile fetch, they recommend 300 to 900 pound stones with 1.4' to 2.0' size. This is in good agreement with the site specific wave forecasting and revetment stone sizing performed.

Wave runup, with and without sea level rise projections, will overtop a stone sill/berm if utilized as a toe for a planted slope. There are several well recognized coastal engineering guidelines that indicate bioengineered slopes at this site will fail due to wave action overtopping the seawall.

The Army Corps of Engineers EM-1110-2-1100[3] for grassed sea dikes subject to wave action will have no damage at overtopping of 0.001 cfs/LF (0.6 cups of water per 5 seconds/LF of embankment). Damage will begin at overtopping rates between 0.01 and 0.1 cfs/LF (1 foot of erosion per hour).

Practical case study experience in Europe has been incorporated into EurOtop software[4]. Table 3.1 in the EurOtop manual for calculating wave overtopping volumes provides a discharge limit of 0.001 (cfs/LF) for grass covered slopes. For this site the wave forecasting and runup in storm events and with sea level rise allowance, indicate that stone armoring is needed up to road surface elevation due to wave overtopping.

ROAD ELEVATION & RESILIENCY:

TR-16 Guides for the Design of Wastewater Treatment Works (2016 rev)[5] is a standard for evaluation and design of wastewater treatment facilities with general guidance for coastal resiliency provisions and climate change. The TR-16 coastal resilience allowances follow the former Obama Executive Order that federally funded projects be designed for flood resistance to 2 or 3 feet above the FEMA 100 yr flood (1% annual chance) elevation depending on how critical the structure is to maintaining service. The FEMA flood hazard elevations do not currently include provisions for future sea level rise, so TR-16 added elevation increase allowances for climate change flood protection design extending 2 or 3

feet above the FEMA 100 yr flood elevation, based on how critical the structure is to the facility function. The FEMA flood map for this site has the 100 year flood elevation (AE zone) at 8 feet NAVD88 datum, following FEMA policy to only provide flood elevations to the nearest foot. The more precise NOAA 100-year flood elevation for 2018 based on tide data is 8.1 feet NAVD88 datum for the adjacent Seavey Island, Maine (Portsmouth Naval Shipyard across the channel).

TR-16 recommends that future sea level rise allowances are added to existing flood study elevations. TR-16 provides generalized added freeboard allowances for sea level rise, however these design criteria do not include a timeline for design life and do not consider site-specific considerations[6].

The Portsmouth Harbor NOAA tide station (Seavey Island) has extensive data gaps (years) where no data were collected. The NOAA tide station in Portland, Maine, however does have observed tide levels with over 100 years of data. The Portland tide station has sea level record since 1912 with an average rise of 1.89+/- 0.14 mm/year at 95% confidence. Looking at the Portland tide data over the last 38 years (two tidal epochs) the rate of sea level rise is about 2.6 mm/year (with a larger standard deviation). It is reasonable to use this 2.6 mm/year (10 inches /100 years) rise rate as a lower limit of anticipated sea level rise near term.

There are recent reports presenting projections for accelerating sea level rise caused by global warming. The latest federal government guide is 2017 NOAA Tech Report 083[7,] Sweet et.al. with tabulated values for relative sea level every 10 years starting in the year 2000, with consideration of land/earth crust vertical movement at selected tide gauge cities, and changes in local sea level including by gravitational changes associated with anticipated ice cap melting. This NOAA report does provide eighteen different decadal projections for local sea level rise at Portland, Maine, but did not relate these to the carbon emissions Representative Concentration Pathway (RCP) models developed by the Intergovernmental Panel on Climate Change (IPCC). Interpolation between the NOAA projection values for RCP4.5 sea level rise values, is plotted in green on Figure 1. The RCP4.5 interpolation between NOAA curves for Portland, indicates about 2.5 feet of sea level rise by year 2100. It is apparent that the actual observed rates of sea level rise from tide data in Portland, from a global average to 20 distributed tide stations and from satellite altimetry measurements (global), that the actual rate of sea level rise is significantly less than the NOAA report projected rate of rise. For early 2020, the NOAA projection curve which started in year 2000, is about 2.7 inches higher than observations and the trends are diverging. Thus the RCP4.5 carbon model and associated global warming sea level rise are not supported by observed data for Maine and New Hampshire.

The US Army Corps of Engineers sea level rise projection curves are shown in yellow and red in Figure 1. The “high” red curve has already diverged from observations. The

"intermediate" yellow curve has much better agreement with observations to date, and suggests 1.6 feet of sea level rise by 2100 above 1992 sea level.

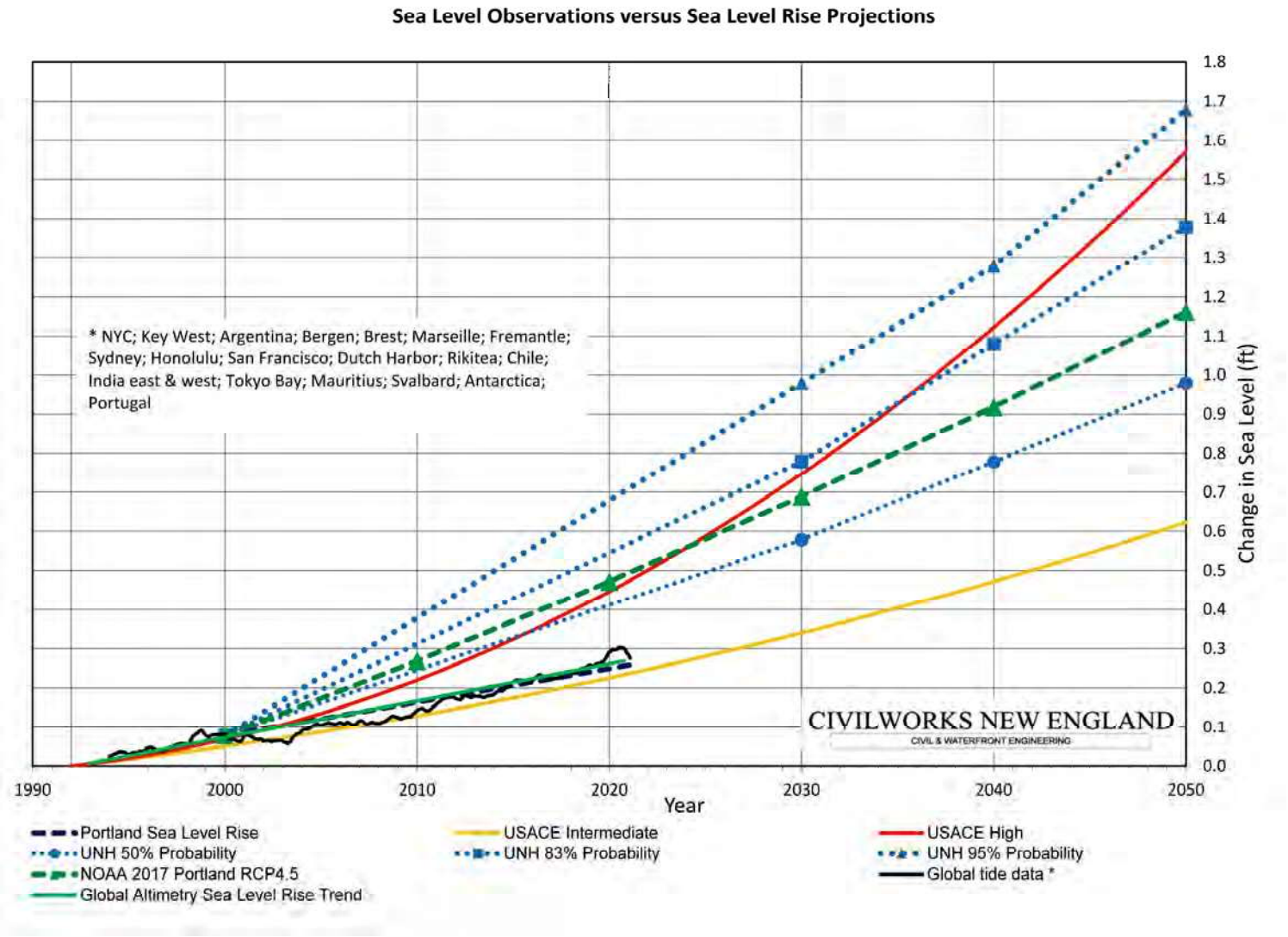

Figure 1 Comparison of Sea Level Rise Projections to Observations

The University of New Hampshire (UNH) issued a two part report *New Hampshire Coastal Flood Risk Summary*[9] in 2019 and 2020, which has been adopted by the state of New Hampshire and is the recommended policy in regulatory permitting by the NH Department of Environmental Services. Both the NOAA projections and the UNH projections use sea level rise projections starting from a sea level in the year 2000, developed by Kopp et. al. (2014)[10]. The UNH report does list probabilities for multiple sea level rise curves, using different probabilities for different projects tolerance for risk. It is important to understand

that these probabilities are Bayesian probabilities, based on future expectations, not traditional probabilities calculated from observational data, such as FEMA flood levels.

The 50% UNH probability sea level rise curve (lower dotted blue line) is plotted from the UNH Part I science report, and it is not used in the Part II guidance report. The Part II guidance report uses the 83% probability curve for the low end of design for projects with a high tolerance for sea level rise. The 95% probability curve is recommended for design of projects with a medium tolerance for sea level rise. UNH does recommend higher 99% and 99.9% probability curves, recommended for design of projects with low and very low tolerance for sea level rise, however these were not plotted given the greater divergence from observed data. For early 2020, the UNH 83% projection curve is about 3.5 inches higher than observations, for UNH 95% projection curve is about 5.2 inches higher than observations and both trends are diverging. The UNH guidance projection curves are based on older rise projections and the UNH model was not calibrated in consideration of actual sea level rise observations and trend over the last 20 years. Since the UNH sea level rise projections are already significantly in higher than observations with a steeper rise trend, they are not recommended for project design.

The design guidance in TR-16 for 100 year flood level plus 3 feet of sea level rise allowance is reasonable and conservative relative to observations, relative to a NOAA RCP4.5 sea level rise projection and relative to the Army Corps of Engineers intermediate sea level rise projection until at least year 2100.

REFERENCES:

1 *Living Shorelines: The Science and Management of Nature-Based Coastal Protection,* CRC Press, 2017, ISBN 9781315151465.

2 *Living Shorelines Engineering Guidelines*, New Jersey Department of Environmental Protection, revised Feb., 2016, SIT-DL-14-9-2942.

3 EM-1110-2-1100, Part 6, Table VI-5-6, Coastal Engineering Manual, US Army Corps of Engineers 2011.

4 *EurOtop*, 2018. Manual on wave overtopping of sea defences and related structures. Van der Meer, J.W., Allsop, N.W.H., Bruce, T., De Rouck, J., Kortenhaus, A., Pullen, T., Schüttrumpf, H., Troch, P. and Zanuttigh, B.

5 *TR-16 Guides For The Design of Wastewater Treatment Works*, NEIWPCC, 2011 Ed., rev 2016.

6 *Coastal Flood Protection: TR-16 Criteria Versus Site Specific Analysis*, D. Mellor, NEWEA Journal, Summer 2020, Vol. 54, No. 2, ISSN 1077-3002.

7 *Global and Regional Sea Level Rise Scenarios for the United States*. NOAA Technical Report NOS CO-OPS 083, Sweet, W.V., R.E. Kopp, C.P. Weaver, J. Obeysekera, R.M. Horton, E.R. Thieler, and C. Zervas, NOAA/NOS Center for Operational Oceanographic Products and Services, 2017.

8 *Procedures to Evaluate Sea Level Change: Impacts, Responses, and Adaptation*, ETL 1100-2-1, June 30, 2014, US Army Corps of Engineers.

9 *New Hampshire Coastal Flood Risk Summary – Part I: Science; Part II: Guidance for Using Scientific Projections*, NH Coastal Flood Risk Science and Technical Advisory Panel (2020), Univ. of New Hampshire, 2019/2020.

10 *Probabilistic 21st and 22nd Century Sea-Level Projections at a Global Network of Tide Gauge Sites.* Earth's Future, Kopp, R.E., Horton, R.M., Little, C.M., Mitrovica, J.X., Oppenheimer, M., Rasmussen, D.J., Strauss, B.H., & Tebaldi, C. (2014).

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TIDAL DATUM

Based on Seavey Island, ME - Datum, NAVD88

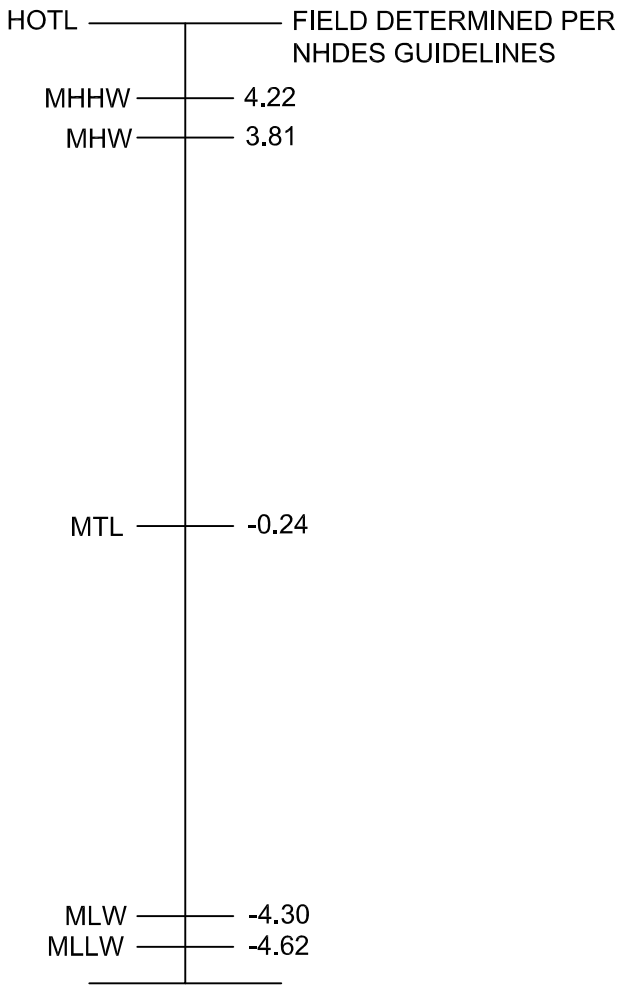
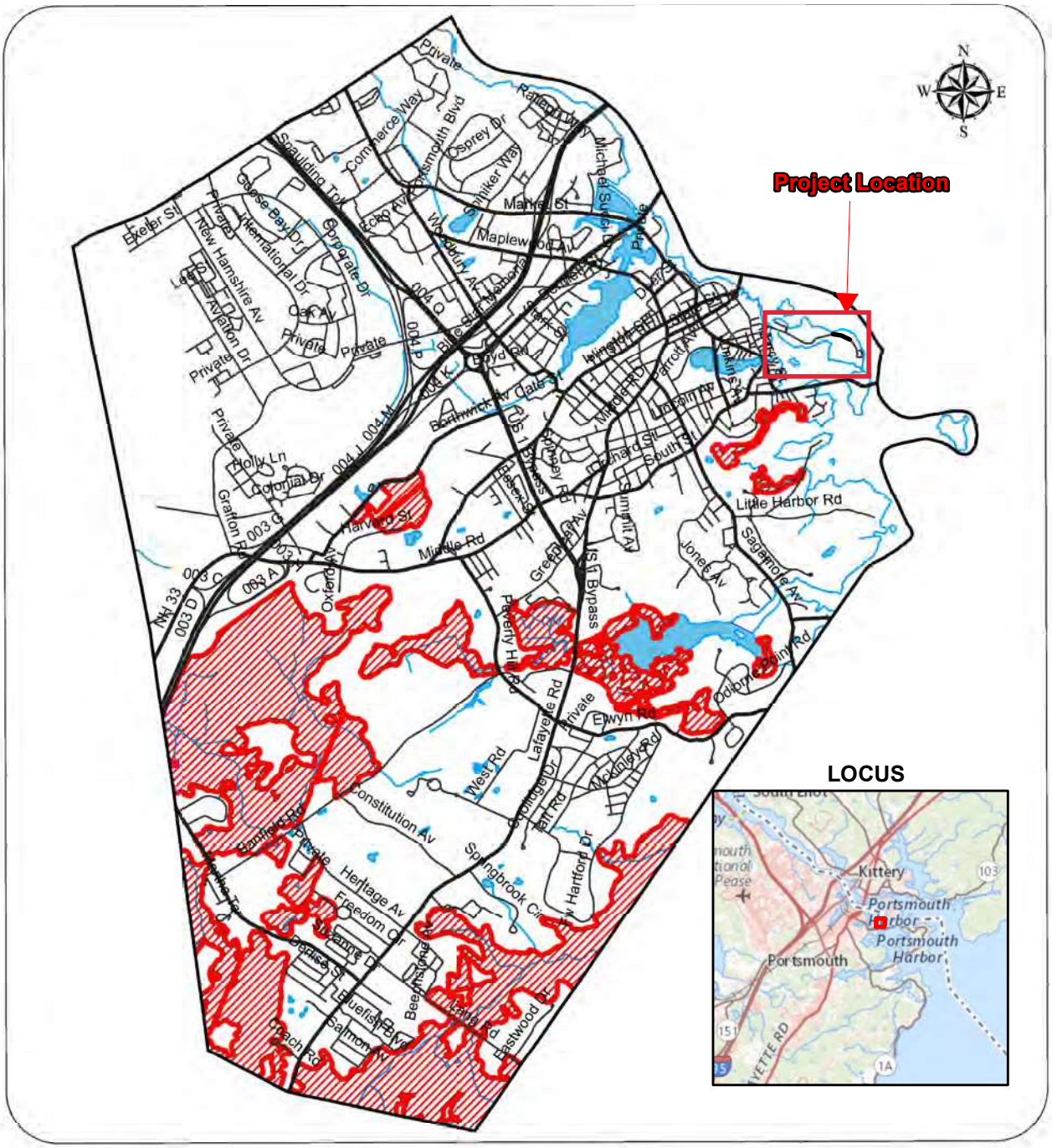


EXHIBIT 26

PRIME WETLANDS



Legend

Roads
- Town
- State

Hydrography
- Surface Water

Prime Wetland
100 Foot Buffer
- NO
- YES
- 100 Foot Buffer

Prime Wetlands in Portsmouth, NH

New Hampshire State Plane Coordinate System
North American Datum 1983 (feet)

The coverages presented are under constant revision, as new sites or facilities are added, and may not contain all potential or existing sites or facilities. These maps were prepared using data supplied by the municipality and the information was digitized to the best of our ability. For prime wetland and prime wetland buffer locations for a specific site, please contact the municipal office where the project is proposed. NHDES is not responsible for the use or interpretation of this information by third parties.

New Hampshire Department of Environmental Services
Wetlands Bureau
29 Hazen Drive
P.O. Box 95
Concord, NH 03302-0095

DATE PRODUCED
October, 2012

1 0.5 0 1 2
Miles

EXHIBIT 27

ATTACHMENT A – MINOR AND MAJOR PROJECTS

STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION ATTACHMENT A: MINOR AND MAJOR PROJECTS

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.10; Env-Wt 313.01(a)(1); Env-Wt 313.03

APPLICANT'S NAME: **Terry Demarais, PE, City of Portsmouth** **TOWN NAME:** Portsmouth

Attachment A is required for *all minor and major projects*, and must be completed *in addition* to the Avoidance and Minimization Narrative or Checklist that is required by Env-Wt 307.11.

For projects involving construction or modification of non-tidal shoreline structures over areas of surface waters having an absence of wetland vegetation, only Sections I.X through I.XV are required to be completed.

PART I: AVOIDANCE AND MINIMIZATION

In accordance with Env-Wt 313.03(a), the Department shall not approve any alteration of any jurisdictional area unless the applicant demonstrates that the potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized, as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization.

SECTION I.I - ALTERNATIVES (Env-Wt 313.03(b)(1))

Describe how there is no practicable alternative that would have a less adverse impact on the area and environments under the Department's jurisdiction.

THIS PROJECT NECESSARILY REQUIRES DISTURBANCE OF A PORTION OF THE PREVIOUSLY DEVELOPED TIDAL BUFFER ZONE AND ROCKY SHORELINE IN WHICH AN OUTLET FOR A NEW STORMWATER DRAINAGE SYSTEM WILL BE INSTALLED. THIS DRAINAGE SYSTEM WILL PROVIDE STORMWATER MANAGEMENT FOR THE NEW PUMP HOUSE BUILDING AND SURROUNDING WALKWAYS AND LAWN AREA AND NO ALTERNATIVE EXISTS FOR PLACEMENT OF THE OUTLET WHILE MEETING THE HYDRAULIC CONDITIONS NECESSARY FOR THE SYSTEM TO FUNCTION. ADDITIONAL WORK WITHIN THE PREVIOUSLY DEVELOPED TIDAL BUFFER ZONE WILL BE THE DEMOLITION OF THE EXISTING OF THE PUMP HOUSE BUILD AND CONVERSION OF THE MOST OF ITS FOOTPRINT TO PERVIOUS GRASS SURFACE, RESULTING IN IMPROVEMENT TO EXISTING ENVIRONMENTAL CONDITIONS. THESE IMPROVEMENTS ALONG WITH REPLACEMENT OF THE PUBLIC POOLS SYSTEMS, VINYL LINER, AND SURROUNDING CONCRETE DECKING WILL BRING A HIGHLY UTILIZED, BUT DETIORATED PUBLIC FACILITY UP TO CURRENT HEALTH AND SAFETY REQUIREMENTS.

SECTION I.II - MARSHES (Env-Wt 313.03(b)(2))

Describe how the project avoids and minimizes impacts to tidal marshes and non-tidal marshes where documented to provide sources of nutrients for finfish, crustacean, shellfish, and wildlife of significant value.

No wetlands providing sources of nutrients for finfish, crustaceans, shellfish, and wildlife of significant value are being impacted as part of this project.

SECTION I.III - HYDROLOGIC CONNECTION (Env-Wt 313.03(b)(3))

Describe how the project maintains hydrologic connections between adjacent wetland or stream systems.

No hydrologic connections exist between adjacent wetland or stream systems within the area of this project.

SECTION I.IV - JURISDICTIONAL IMPACTS (Env-Wt 313.03(b)(4))

Describe how the project avoids and minimizes impacts to wetlands and other areas of jurisdiction under RSA 482-A, especially those in which there are exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern, or any combination thereof.

There is no potential impact to exemplary natural communities, vernal pools, documented fisheries, and habitat and reproduction areas for species of concern. The majority of the environment to be impact by this project is an already highly disturbed Tidal Buffer Zone environment and a small portion of the rocky shore. There are populations of a protected species, Iva Frutescens, on Peirce Island, but they are not located within the vicinity of the proposed work.

SECTION I.V - PUBLIC COMMERCE, NAVIGATION, OR RECREATION (Env-Wt 313.03(b)(5))

Describe how the project avoids and minimizes impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation.

There is no potential for impacts that would eliminate, depreciate, or obstruct public commerce in relation to this project. No businesses will be closed as a result of construction, and the project will have a long term benefit by improving a recreational area for the public.

SECTION I.VI - FLOODPLAIN WETLANDS (Env-Wt 313.03(b)(6))

Describe how the project avoids and minimizes impacts to floodplain wetlands that provide flood storage.

The proposed work will have no impact on the flood storage or effect on tidal elevations during storms.

SECTION I.VII - RIVERINE FORESTED WETLAND SYSTEMS AND SCRUB-SHRUB – MARSH COMPLEXES (Env-Wt 313.03(b)(7))

Describe how the project avoids and minimizes impacts to natural riverine forested wetland systems and scrub-shrub – marsh complexes of high ecological integrity.

There are no natural riverine forested wetland systems or scrub-shrub marsh complexes affected by the proposed project.

SECTION I.VIII - DRINKING WATER SUPPLY AND GROUNDWATER AQUIFER LEVELS (Env-Wt 313.03(b)(8))

Describe how the project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.

This project is located immediately upstream of the tidal system, thus impacts to the site will not affect drinking water supplies or groundwater aquifers.

SECTION I.IX - STREAM CHANNELS (Env-Wt 313.03(b)(9))

Describe how the project avoids and minimizes adverse impacts to stream channels and the ability of such channels to handle runoff of waters.

There are no stream channels in the area to be impacted by the project.

SECTION I.X - SHORELINE STRUCTURES - CONSTRUCTION SURFACE AREA (Env-Wt 313.03(c)(1))

Describe how the project has been designed to use the minimum construction surface area over surface waters necessary to meet the stated purpose of the structures.

There is no planned construction of shoreline structures for this project.

SECTION I.XI - SHORELINE STRUCTURES - LEAST INTRUSIVE UPON PUBLIC TRUST (Env-Wt 313.03(c)(2))

Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.

There is no planned construction of shoreline structures for this project.

SECTION I.XII - SHORELINE STRUCTURES – ABUTTING PROPERTIES (Env-Wt 313.03(c)(3))

Describe how the structures have been designed to avoid and minimize impacts on ability of abutting owners to use and enjoy their properties.

There is no planned construction of shoreline structures for this project.

SECTION I.XIII - SHORELINE STRUCTURES – COMMERCE AND RECREATION (Env-Wt 313.03(c)(4))

Describe how the structures have been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.

There is no planned construction of shoreline structures for this project.

SECTION I.XIV - SHORELINE STRUCTURES – WATER QUALITY, AQUATIC VEGETATION, WILDLIFE AND FINFISH HABITAT (Env-Wt 313.03(c)(5))

Describe how the structures have been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.

There is no planned construction of shoreline structures for this project.

SECTION I.XV - SHORELINE STRUCTURES – VEGETATION REMOVAL, ACCESS POINTS, AND SHORELINE STABILITY (Env-Wt 313.03(c)(6))

Describe how the structures have been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.

There is no planned construction of shoreline structures for this project.

PART II: FUNCTIONAL ASSESSMENT
REQUIREMENTS Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).
FUNCTIONAL ASSESSMENT METHOD USED: This project, proposes direct impacts to a small portion of the unvegetated rocky shore. No other impacts to tidal wetlands or waters are proposed. The US Army Corps of Engineers highway methodology was used to evaluate the functions of the salt marsh and rocky shore adjacent to the proposed project.
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: BENJAMIN GRIFFITH
DATE OF ASSESSMENT: 06/25/21
Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT: ☒
For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable: ☒ Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.

EXHIBIT 28

FUNCTIONAL ASSESSMENT WORKSHEETS, NATURAL RESOURCE SUMMARY, AND CORPS PLOTS

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

APPLICANT LAST NAME, FIRST NAME, M.I.: Terry Demarais, PE, City of Portsmouth

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the Avoidance and Minimization Written Narrative (NHDES-W-06-089) and the Avoidance and Minimization Checklist (NHDES-W-06-050) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached to the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Mowed lawn, public walking path, outdoor swimming pool	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 10	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Benjamin Griffith, NH CWS #298	
DATE(S) OF SITE VISIT(S): 06/25/21	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if "other"): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: Salt marsh south of laydown	LOCATION: (LAT/ LONG) 43.074282/-70.744530
WETLAND AREA: 1,270 sf of the salt marsh was delineated in the project vicinity, but the wetland extends west along the shoreline beyond the project area.	DOMINANT WETLAND SYSTEMS PRESENT: Fringe salt marsh
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? None	COWARDIN CLASS: E2EM1
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Lower	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☒ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☒ Yes ☐ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: None	PROPOSED WETLAND IMPACT AREA: None

SECTION 4 - WETLANDS FUNCTIONS AND VALUES (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

1. Ecological Integrity (from RSA 482-A:2, XI)
2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient Removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for a particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE *The Highway Methodology Workbook Supplement*. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in *The Highway Methodology Workbook Supplement*, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function only) and/or are considered of special value to society, from a local, regional, and/or national perspective".

"Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☒ Yes ☐ No	Fringing salt marsh on northern side of the island provides physical and biological value to area	☐ Yes ☒ No	Marsh further to the west supports Iva frutescens, a State-Threatened species, according to NHB DataCheck.
2	☐ Yes ☒ No	1,2,8,9,14	☐ Yes ☒ No	Marsh is of limited value due to small size and fringe nature.
3	☒ Yes ☐ No	1,2,3,4,6	☐ Yes ☒ No	Site is adjacent to Piscataqua River, with anadromous fish migration. Offers nursery and forage to multiple fish species.
4	☐ Yes ☒ No	6,10,11,13	☐ Yes ☒ No	Fringe marsh provides minor storage and buffer during storms and flooding
5	☐ Yes ☒ No	4,8,15	☐ Yes ☒ No	Borders tidal waters, underlain by mudflat, gravel, and bedrock
6	☒ Yes ☐ No	1	☐ Yes ☒ No	Marsh further to the west supports Iva frutescens, a State-Threatened species, according to NHB DataCheck.
7	☒ Yes ☐ No	3,5,7,9,11,12,14	☐ Yes ☒ No	Fringe marsh vegetation provides limited nutrient removal opportunities of runoff from adjacent walking trail and lawns.
8	☒ Yes ☐ No	2,5,6,11,13	☐ Yes ☒ No	Fringe marsh vegetation supports invertebrates and exports detritus for food web support.
9	☒ Yes ☐ No	2,7,12	☐ Yes ☒ No	Fringe marsh adds visual benefit in developed Portsmouth landscape.
10	☒ Yes ☐ No	1,3,4	☐ Yes ☒ No	Fringe marsh provides minor sediment removal function from runoff from walking trail and lawns.
11	☒ Yes ☐ No	1,7,10,11	☒ Yes ☐ No	Fringe marsh provides some energy absorbing action to protect shoreline from scour.
12	☒ Yes ☐ No	1,10,13,14,22,24,28	☒ Yes ☐ No	Marsh is adjacent to the Peirce Island trail system and the marsh further to the west supports the rare shrub, Iva frutescens based on NHB DataCheck.

13	☐ Yes ☒ No	7,9,10,12	☐ Yes ☒ No	Marsh in close proximity to proposed parking area.
14	☒ Yes ☐ No	3,6,8,19	☐ Yes ☒ No	Fringe marsh provides wildlife habitat on island in developed Portsmouth harbor.

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by the New Hampshire Fish and Game Department; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM:	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED?	DOES THE STREAM SYSTEM APPEAR STABLE?

☐ Yes ☐ No	☐ Yes ☐ No

OTHER KEY ON-SITE FUNCTIONS OF NOTE:

The following table can be used to compile data on stream resources. "Important Notes" are to include characteristics the evaluator used to determine principal function and value of each stream. The functions and values reference number are defined in Section 4.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☒ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

WETLANDS FUNCTIONAL ASSESSMENT WORKSHEET

Water Division/Land Resource Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A / Env-Wt 311.03(b)(10); Env-Wt 311.10

APPLICANT LAST NAME, FIRST NAME, M.I.: Terry Demarais, PE, City of Portsmouth

As required by Env-Wt 311.03(b)(10), an application for a standard permit for minor and major projects must include a functional assessment of all wetlands on the project site as specified in Env-Wt 311.10. This worksheet will help you compile data for the functional assessment needed to meet federal (US Army Corps of Engineers (USACE); if applicable) and NHDES requirements. Additional requirements are needed for projects in tidal area; please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

Both a desktop review and a field examination are needed to accurately determine surrounding land use, hydrology, hydroperiod, hydric soils, vegetation, structural complexity of wetland classes, hydrologic connections between wetlands or stream systems or wetland complex, position in the landscape, and physical characteristics of wetlands and associated surface waters. The results of the evaluation are to be used to select the location of the proposed project having the least impact to wetland functions and values (Env-Wt 311.10). This worksheet can be used in conjunction with the Avoidance and Minimization Written Narrative (NHDES-W-06-089) and the Avoidance and Minimization Checklist (NHDES-W-06-050) to address Env-Wt 313.03 (Avoidance and Minimization). If more than one wetland/ stream resource is identified, multiple worksheets can be attached to the application. All wetland, vernal pools, and stream identification (ID) numbers are to be displayed and located on the wetlands delineation of the subject property.

SECTION 1 - LOCATION (USACE HIGHWAY METHODOLOGY)	
ADJACENT LAND USE: Mowed lawn, public walking path, outdoor swimming pool and associated parking lot	
CONTIGUOUS UNDEVELOPED BUFFER ZONE PRESENT? ☐ Yes ☒ No	
DISTANCE TO NEAREST ROADWAY OR OTHER DEVELOPMENT (in feet): 10	
SECTION 2 - DELINEATION (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
CERTIFIED WETLAND SCIENTIST (if in a non-tidal area) or QUALIFIED COASTAL PROFESSIONAL (if in a tidal area) who prepared this assessment: Benjamin Griffith, NH CWS #298	
DATE(S) OF SITE VISIT(S): 06/25/21	DELINEATION PER ENV-WT 406 COMPLETED? ☒ Yes ☐ No
CONFIRM THAT THE EVALUATION IS BASED ON: ☒ Office and ☒ Field examination.	
METHOD USED FOR FUNCTIONAL ASSESSMENT (check one and fill in blank if “other”): ☒ USACE Highway Methodology. ☐ Other scientifically supported method (enter name/ title):	

SECTION 3 - WETLAND RESOURCE SUMMARY (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)	
WETLAND ID: Rocky shore on north side of island	LOCATION: (LAT/ LONG) 43.075225/-70.745001
WETLAND AREA: ~350 sf of rocky shore and tidal mudflat occur off north side of the pool. The rocky shore extends east along the shore beyond the project area.	DOMINANT WETLAND SYSTEMS PRESENT: Rocky shore
HOW MANY TRIBUTARIES CONTRIBUTE TO THE WETLAND? None	COWARDIN CLASS: E2RS
IS THE WETLAND A SEPARATE HYDRAULIC SYSTEM? ☐ Yes ☒ No if not, where does the wetland lie in the drainage basin? Lower	IS THE WETLAND PART OF: ☐ A wildlife corridor or ☒ A habitat island? IS THE WETLAND HUMAN-MADE? ☐ Yes ☒ No
IS THE WETLAND IN A 100-YEAR FLOODPLAIN? ☒ Yes ☐ No	ARE VERNAL POOLS PRESENT? ☐ Yes ☒ No (If yes, complete the Vernal Pool Table)
ARE ANY WETLANDS PART OF A STREAM OR OPEN-WATER SYSTEM? ☒ Yes ☐ No	ARE ANY PUBLIC OR PRIVATE WELLS DOWNSTREAM/ DOWNGRADIENT? ☐ Yes ☒ No
PROPOSED WETLAND IMPACT TYPE: Installation of a stormwater outlet pipe and stone rip rap apron for erosion protection purposes in the rocky shore.	PROPOSED WETLAND IMPACT AREA: 125 sf

SECTION 4 - WETLANDS FUNCTIONS AND VALUES (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

The following table can be used to compile data on wetlands functions and values. The reference numbers indicated in the "Functions/ Values" column refer to the following functions and values:

1. Ecological Integrity (from RSA 482-A:2, XI)
2. Educational Potential (from USACE Highway Methodology: Educational/Scientific Value)
3. Fish & Aquatic Life Habitat (from USACE Highway Methodology: Fish & Shellfish Habitat)
4. Flood Storage (from USACE Highway Methodology: Floodflow Alteration)
5. Groundwater Recharge (from USACE Highway Methodology: Groundwater Recharge/Discharge)
6. Noteworthiness (from USACE Highway Methodology: Threatened or Endangered Species Habitat)
7. Nutrient Trapping/Retention & Transformation (from USACE Highway Methodology: Nutrient Removal)
8. Production Export (Nutrient) (from USACE Highway Methodology)
9. Scenic Quality (from USACE Highway Methodology: Visual Quality/Aesthetics)
10. Sediment Trapping (from USACE Highway Methodology: Sediment /Toxicant Retention)
11. Shoreline Anchoring (from USACE Highway Methodology: Sediment/Shoreline Stabilization)
12. Uniqueness/Heritage (from USACE Highway Methodology)
13. Wetland-based Recreation (from USACE Highway Methodology: Recreation)
14. Wetland-dependent Wildlife Habitat (from USACE Highway Methodology: Wildlife Habitat)

First, determine if a wetland is suitable for a particular function and value ("Suitability" column) and indicate the rationale behind your determination ("Rationale" column). Please use the rationale reference numbers listed in Appendix A of USACE *The Highway Methodology Workbook Supplement*. Second, indicate which functions and values are principal ("Principal Function/value?" column). As described in *The Highway Methodology Workbook Supplement*, "functions and values can be principal if they are an important physical component of a wetland ecosystem (function

only) and/or are considered of special value to society, from a local, regional, and/or national perspective". "Important Notes" are to include characteristics the evaluator used to determine the principal function and value of the wetland.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE (Reference #)	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☒ Yes ☐ No	Provides buffer from wave action and habitat for marine species	☐ Yes ☒ No	Disturbed habitat with rip rap along bank face, more level sections northeast of the pool appears undisturbed.
2	☐ Yes ☒ No	8,10	☐ Yes ☒ No	
3	☒ Yes ☐ No	3,4,5,6	☒ Yes ☐ No	Adjacent to Piscataqua River, with anadromous fish migration. Offers nursery and forage to multiple fish species.
4	☐ Yes ☒ No	3,9,13	☐ Yes ☒ No	Steep gradient provides minimal storage during storms and flooding.
5	☐ Yes ☒ No	7	☐ Yes ☒ No	
6	☐ Yes ☒ No	None	☐ Yes ☒ No	Mapped as high value on WAP, but appears to be spillover from estuary
7	☐ Yes ☒ No	2,4,5	☐ Yes ☒ No	Rockweed provides minimal nutrient removal opportunities from runoff.
8	☒ Yes ☐ No	2,5,6	☐ Yes ☒ No	Rockweed provides some forage and shelter for higher trophic organisms, occasional detritus.
9	☒ Yes ☐ No	6,7,12	☐ Yes ☒ No	Path will allow public viewing.
10	☐ Yes ☒ No	8	☐ Yes ☒ No	Hard, steep substrate provides minimal sediment removal function.
11	☒ Yes ☐ No	2,8,11	☒ Yes ☐ No	Ledge protects against erosion from wave action
12	☒ Yes ☐ No	9,14,22	☐ Yes ☒ No	Typical rocky shore of Piscataqua River, but path will allow public viewing.

13	☐ Yes ☒ No	6,7,9	☐ Yes ☒ No	
14	☒ Yes ☐ No	24	☐ Yes ☒ No	Marine invertebrates and rockweed provide forage for seaducks.

SECTION 5 - VERNAL POOL SUMMARY (Env-Wt 311.10)

Delineations of vernal pools shall be based on the characteristics listed in the definition of "vernal pool" in Env-Wt 104.44. To assist in the delineation, individuals may use either of the following references:

- *Identifying and Documenting Vernal Pools in New Hampshire 3rd Ed.*, 2016, published by the New Hampshire Fish and Game Department; or
- The USACE *Vernal Pool Assessment* draft guidance dated 9-10-2013 and form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

All vernal pool ID numbers are to be displayed and located on the wetland delineation of the subject property.

"Important Notes" are to include documented reproductive and wildlife values, landscape context, and relationship to other vernal pools/wetlands.

Note: For projects seeking federal approval from the USACE, please attach a completed copy of The USACE "Vernal Pool Assessment" form dated 9-6-2016, Appendix L of the USACE New England District *Compensatory Mitigation Guidance*.

VERNAL POOL ID NUMBER	DATE(S) OBSERVED	PRIMARY INDICATORS PRESENT (LIST)	SECONDARY INDICATORS PRESENT (LIST)	LENGTH OF HYDROPERIOD	IMPORTANT NOTES
1					
2					
3					
4					
5					

SECTION 6 - STREAM RESOURCES SUMMARY

DESCRIPTION OF STREAM:	STREAM TYPE (ROSGEN):
HAVE FISHERIES BEEN DOCUMENTED?	DOES THE STREAM SYSTEM APPEAR STABLE?

☐ Yes ☐ No	☐ Yes ☐ No

OTHER KEY ON-SITE FUNCTIONS OF NOTE:

The following table can be used to compile data on stream resources. "Important Notes" are to include characteristics the evaluator used to determine principal function and value of each stream. The functions and values reference number are defined in Section 4.

FUNCTIONS/ VALUES	SUITABILITY (Y/N)	RATIONALE	PRINCIPAL FUNCTION/VALUE? (Y/N)	IMPORTANT NOTES
1	☐ Yes ☐ No		☐ Yes ☐ No	
2	☐ Yes ☐ No		☐ Yes ☐ No	
3	☐ Yes ☐ No		☐ Yes ☐ No	
4	☐ Yes ☐ No		☐ Yes ☐ No	
5	☐ Yes ☐ No		☐ Yes ☐ No	
6	☐ Yes ☐ No		☐ Yes ☐ No	
7	☐ Yes ☐ No		☐ Yes ☐ No	
8	☐ Yes ☐ No		☐ Yes ☐ No	
9	☐ Yes ☐ No		☐ Yes ☐ No	
10	☐ Yes ☐ No		☐ Yes ☐ No	
11	☐ Yes ☐ No		☐ Yes ☐ No	
12	☐ Yes ☐ No		☐ Yes ☐ No	
13	☐ Yes ☐ No		☐ Yes ☐ No	
14	☐ Yes ☐ No		☐ Yes ☐ No	

SECTION 7 - ATTACHMENTS (USACE HIGHWAY METHODOLOGY; Env-Wt 311.10)

☒ Wildlife and vegetation diversity/abundance list.

☒ Photograph of wetland.

☒ Wetland delineation plans showing wetlands, vernal pools, and streams in relation to the impact area and surrounding landscape. Wetland IDs, vernal pool IDs, and stream IDs must be indicated on the plans.

☒ For projects in tidal areas only: additional information required by Env-Wt 603.03/603.04. Please refer to the Coastal Area Worksheet (NHDES-W-06-079) for more information.

Peirce Island Pool Renovations

Wetland Narrative

Section 1. Required Information

Peirce Island is located in the City of Portsmouth on the Piscataqua River. It is owned by the City and the State of NH, and provides multiple public services, including the WWTF, the State Fish Pier, the public outdoor pool, boat ramp, park, and numerous walking trails. The Project Area consists of the public outdoor pool located on the western half of the island. The shoreline of Peirce Island is bordered by estuarine habitats, including rocky shore (E2RS1/2) and salt marsh (E2EM1), with a salt marsh located within 100 ft of the portions of the proposed work. A small freshwater wetland is also present off the northwestern corner of the pool. No impacts to the salt marsh or freshwater wetland are proposed. Minor impacts to the rocky shore north of the pool are proposed for the installation of a new stormwater drainage system outlet. Most of the work lies within the protected shoreland, with the demolition of the existing pump house and portions of the new stormwater drainage system and pool repairs lying within the 100-foot tidal buffer zone. Marsh elder (*Iva frutescens*), a State Threatened plant species that is known to occur on Peirce Island, was surveyed for within a 100-foot buffer of the project in Summer 2021 and 2022 and none were found.

See representative photographs of resources in Exhibit 15.

Tidal Buffer Zone

The proposed demolition of the existing pump house and portions of the new stormwater drainage system and pool repairs occurs within the jurisdictional tidal buffer zone (TBZ), the majority of which is previously developed (PDTBZ). The majority of the PDTBZ within the project area includes the pool, pool deck, existing pump house, walking trail, paved parking lot, and surrounding grassed lawns that are regularly maintained. A sparse, 3-foot wide vegetation buffer occurs along the top of the slope north of the pool that leads down to a combination of rocky shore and cobble/gravel shore, which is dominated by patches of beach rose (*Rosa rugosa*) and a mix of perennial grasses and forbs. A portion of this vegetation buffer not containing beach rose will be disturbed as part of the installation of the stormwater outlet and will be restored following completion of the installation. An isolated persistent emergent wetland that is seasonally flooded/saturated (PEM1E) occurs directly west of the existing pumphouse. This wetland is dominated by cattails (*Typha latifolia*) and purple loosestrife (*Lythrum salicaria*) and its soils contain prominent redox concentrations with a depleted matrix (F3). The wetland had saturated soils at the surface and a water table 5 inches from the surface. This emergent wetland will not be impacted by the project.

Salt Marsh

Several sections of salt marsh occur on the southern, more protected side of the island, as well one section on the northern side of the island. The marsh on the southern side are a mix of high marsh and low marsh with typical *Spartina* species (*S. alterniflora* in the low marsh and *S. patens* dominating the high marsh), while the marsh on the northern side is exclusively low marsh. Typical salt marsh forbs

dominate in the upper marsh and marsh elder (NH State Threatened; see NHB21-1136) and occurs in multiple stands along the upland border on the southern side of the island and is reported to occur on the northern side of the island northwest of the project area. No marsh elder was found to occur along the upland border of the salt marsh on the northern side of the island within 100 feet of the project. No salt marsh or marsh elder will be impacted by the project.

Rocky Shore

The northern portion of Peirce Island below the Highest Observable Tide Line is predominately bedrock outcrop and cobble/gravel shore. Rockweeds (*Ascophyllum* and *Fucus* spp) are prevalent in the lower intertidal zone on boulders and ledge, but much of the remaining rocky shore is unvegetated. A small area of the unvegetated rocky shore will be impacted by the proposed installation of a new stormwater drainage outlet and rip rap apron north of the Peirce Island public pool.

Protected Shoreland

Over half of the proposed work will occur in the protected shoreland above the TBZ. All the protected shoreland above the TBZ in the western portion of the island is developed and regularly maintained including a portion of the public outdoor pool, associated parking lot, surrounding lawn areas, unpaved walking paths, and Peirce Island Road.

State-Listed Species

The NHB data review (NHB21-1136; Exhibit 19) indicates eelgrass (*Zostera maritima*) and Atlantic and Shortnose Sturgeon (*Acipenser oxyrinchus* and *A. brevirostrum*) occur in the subtidal waters off Peirce Island. The proposed work will have no adverse impacts to those marine species. The project does not impact any estuarine or marine wetland resources, nor does it include significant noise, blasting, or adverse impacts to water quality.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Peirce Island Pool Renovation City/County: Portsmouth/Rockingham Sampling Date: June 25, 2021

Applicant/Owner: City of Portsmouth State: NH Sampling Point: PW1-Wet

Investigator(s): B. Griffith Section, Township, Range:

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope %: 0

Subregion (LRR or MLRA): LRR R Lat: 43.075206 Long: -70.745518 Datum: WGS 1984

Soil Map Unit Name: Urban land-Canton complex NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Portsmouth is listed as being in a Moderate Drought accroding to the U.S. Drought Monitor.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 5
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: PW1-Wet

Tree Stratum (Plot size: 30' R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15' R)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5' R)			
1. *Typha latifolia*	60	Yes	OBL
2. *Lythrum salicaria*	25	Yes	OBL
3. *Carex stipata*	5	No	OBL
4. *Parthenocissus quinquefolia*	1	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	91 =Total Cover		
Woody Vine Stratum (Plot size: 30' R)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	91 (A)		94 (B)

Prevalence Index = B/A = 1.03

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point PW1-Wet

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 6/1	95	7.5YR 5/8	5	C	PL	Loamy/Clayey	Prominent redox concentrations

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 6

Hydric Soil Present? **Yes** ___ **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Peirce Island Pool Renovation City/County: Portsmouth/Rockingham Sampling Date: June 25, 2021

Applicant/Owner: City of Portsmouth State: NH Sampling Point: Tidal Plot

Investigator(s): B. Griffith Section, Township, Range:

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope %: 0

Subregion (LRR or MLRA): LRR R Lat: 43.07542 Long: -70.745455 Datum: WGS 1984

Soil Map Unit Name: Urban land-Canton complex NWI classification: E2US3M

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Portsmouth is listed as being in a Moderate Drought according to the U.S. Drought Monitor.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: Tidal Plot

Tree Stratum (Plot size: 30' R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15' R)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	=Total Cover		
Herb Stratum (Plot size: 5' R)			
1. *Spartina alterniflora*	60	Yes	OBL
2. *Suaeda linearis*	5	No	OBL
3. *Distichlis spicata*	10	No	UPL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75 =Total Cover		
Woody Vine Stratum (Plot size: 30' R)			
1.			
2.			
3.			
4.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	65	x 1 =	65
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	75 (A)		115 (B)

Prevalence Index = B/A = 1.53

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Tidal Plot

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

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

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

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- X Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 4

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Peirce Island Pool Renovation City/County: Portsmouth/Rockingham Sampling Date: June 25, 2021

Applicant/Owner: City of Portsmouth State: NH Sampling Point: PW1-UPL

Investigator(s): B. Griffith Section, Township, Range:

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope %: 0

Subregion (LRR or MLRA): LRR R Lat: 43.075355 Long: -70.745531 Datum: WGS 1984

Soil Map Unit Name: Urban land-Canton complex NWI classification: None

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

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

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

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

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes ____	No X	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Portsmouth is listed as being in a Moderate Drought according to the U.S. Drought Monitor.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? **Yes** ____ **No** X

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

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: PW1-UPL

Tree Stratum (Plot size: 30' R)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' R)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	
Herb Stratum (Plot size: 5' R)			
1. *Elymus virginicus*	60	Yes	FACW
2. *Solidago sempervirens*	20	Yes	FACW
3. *Galaeopsis tetrahit*	10	No	UPL
4. *Alopecurus pratensis*	5	No	FAC
5. *Poaceae*	5	No	
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: 30' R)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	80	x 2 =	160
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	95 (A)		225 (B)

Prevalence Index = B/A = 2.37

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

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

Definitions of Vegetation Strata:

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

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

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

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

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point PW1-UPL

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

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

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

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

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 4

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)