June 4, 2019
Kleinfelder Project No.: 20191016.012-A

Amelia Croteau
Executive Secretary
City of Boston Conservation Commission
1 City Hall Square #500
Boston, MA 02201

SUBJECT: MASSACHUSETTS WATER RESOURCE AUTHORITY BELLE ISLE SANDCATCHER INVESTIGATIONS AND REPAIRS PROJECT

SARATOGA STREET, BOSTON, MA; BELLE ISLE MARSH

Dear Ms. Croteau:

Please accept this Request for Determination of Applicability (RDA) on behalf of the Massachusetts Water Resource Authority (MWRA) for authorization under the Massachusetts Wetlands Protection Act (WPA). The proposed work within wetlands resources includes the investigation of a fracture on the exposed northern side of the Belle Isle Sandcatcher structure, which retains grit prior to sewage flow to the Deer Island Wastewater treatment facility under the Belle Isle Inlet. Observations from this investigation will inform subsequent recommendations to repair the structural defects.

The MWRA respectfully requests an exemption from the WPA Regulations for the submittal of a Notice of Intent. The proposed investigation needed to determine the required repair of the structure "will not substantially change or enlarge an existing and lawfully located structure or facility used in the service of the public" for sewer services; per 310 CMR 10.02(2)(a)2. As explained in the enclosed RDA, the proposed work utilizes the best practical measures to avoid and/or minimize impacts to coastal wetland resources outside the footprint of said structure.

Julie Conroy, Permitting Specialist, will serve as the primary liaison on this RDA. She may be reached at 617.468.4647 or jconroy@kleinfelder.com.

Sincerely,

KLEINFELDER

Mark Thompson, P.E.
Project Manager

cc: Mary White, David Bagdigian, MWRA
Daniel Scott, Julie Conroy, Kleinfelder

Encl: RDA Package

KLEINFELDER One Beacon Street, Suite 8100, Boston, MA 02108 p | 617.497.7800 f | 617.498.4630

MASSACHUSETTS WATER RESOURCE AUTHORITY BELLE ISLE SANDCATCHER INVESTIGATIONS AND REPAIRS PROJECT

SARATOGA STREET, BOSTON, MA; BELLE ISLE MARSH

PROJECT #: 20191016.012-A

June 4, 2019

Report Prepared for:

Amelia Croteau
Executive Secretary/Floodplain Mgr.
City of Boston Conservation Commission
1 City Hall Square #500
Boston, MA 02201

MASSACHUSETTS WATER RESOURCE AUTHORITY SANDCATCHER REPAIR PROJECT

Prepared by:

Julie A Conroy, AICP
Sr. Planner / Permitting Specialist

Reviewed by:

Mark Thompson
Project Manager

KLEINFELDER
One Beacon Street, Suite 8100
Boston, MA 021008
Phone: 617.498.7800

June 4, 2019
#20191016.012-A

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1 WPA FORM 1 - REQUEST FOR DETERMINATION OF APPLICABILITY

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

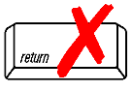
Boston
City/Town

WPA Form 1- Request for Determination of Applicability

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

A. General Information

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Applicant:

Massachusetts Water Resource Authority (MWRA) — Name
E-Mail Address
100 First Ave, Building 39 — Mailing Address
Boston — City/Town
MA — State
02129 — Zip Code
617-242-6000 — Phone Number
Fax Number (if applicable)

2. Representative (if any):

Kleinfelder — Firm
Julie Conroy, AICP — Contact Name
jconroy@kleinfelder.com — E-Mail Address
One Beacon Street, Suite 8100 — Mailing Address
Boston — City/Town
MA — State
02108 — Zip Code
617-498-4647 — Phone Number
Fax Number (if applicable)

B. Determinations

1. I request the Boston Conserv. Comm. (Conservation Commission) make the following determination(s). Check any that apply:

☒ a. whether the **area** depicted on plan(s) and/or map(s) referenced below is an area subject to jurisdiction of the Wetlands Protection Act.

☒ b. whether the **boundaries** of resource area(s) depicted on plan(s) and/or map(s) referenced below are accurately delineated.

☒ c. whether the **work** depicted on plan(s) referenced below is subject to the Wetlands Protection Act.

☐ d. whether the area and/or work depicted on plan(s) referenced below is subject to the jurisdiction of any **municipal wetlands ordinance** or **bylaw** of:

Name of Municipality

☐ e. whether the following **scope of alternatives** is adequate for work in the Riverfront Area as depicted on referenced plan(s).

C. Project Description

1. a. Project Location (use maps and plans to identify the location of the area subject to this request):

Saratoga Street	Boston
Street Address	City/Town
	0101358000
Assessors Map/Plat Number	Parcel/Lot Number

b. Area Description (use additional paper, if necessary):

Belle Isle Marsh - See Project Narrative

c. Plan and/or Map Reference(s):

Title	Date
Title	Date
Title	Date

2. a. Work Description (use additional paper and/or provide plan(s) of work, if necessary):

See Project Narrative

C. Project Description (cont.)

b. Identify provisions of the Wetlands Protection Act or regulations which may exempt the applicant from having to file a Notice of Intent for all or part of the described work (use additional paper, if necessary).

310 CMR 10.02(2)(a)2: "activities conducted to…repair…, but not substantially change or enlarge an existing and lawfully located structure or facility used in the service of the public and used to provide…water, sewer…, provided said work utilizes the best practical measures to avoid or minimize impacts to wetland resources outside of the footprint of said structure or facility."

3. a. If this application is a Request for Determination of Scope of Alternatives for work in the Riverfront Area, indicate the one classification below that best describes the project.

- ☐ Single family house on a lot recorded on or before 8/1/96
- ☐ Single family house on a lot recorded after 8/1/96
- ☐ Expansion of an existing structure on a lot recorded after 8/1/96
- ☐ Project, other than a single family house or public project, where the applicant owned the lot before 8/7/96
- ☐ New agriculture or aquaculture project
- ☐ Public project where funds were appropriated prior to 8/7/96
- ☐ Project on a lot shown on an approved, definitive subdivision plan where there is a recorded deed restriction limiting total alteration of the Riverfront Area for the entire subdivision
- ☐ Residential subdivision; institutional, industrial, or commercial project
- ☐ Municipal project
- ☐ District, county, state, or federal government project
- ☐ Project required to evaluate off-site alternatives in more than one municipality in an Environmental Impact Report under MEPA or in an alternatives analysis pursuant to an application for a 404 permit from the U.S. Army Corps of Engineers or 401 Water Quality Certification from the Department of Environmental Protection.

b. Provide evidence (e.g., record of date subdivision lot was recorded) supporting the classification above (use additional paper and/or attach appropriate documents, if necessary.)

D. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Request for Determination of Applicability and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge.

I further certify that the property owner, if different from the applicant, and the appropriate DEP Regional Office were sent a complete copy of this Request (including all appropriate documentation) simultaneously with the submittal of this Request to the Conservation Commission.

Failure by the applicant to send copies in a timely manner may result in dismissal of the Request for Determination of Applicability.

Name and address of the property owner:

MWRA
Name

100 First Ave, Building 39
Mailing Address

Boston
City/Town

MA
State

02129
Zip Code

Signatures:

I also understand that notification of this Request will be placed in a local newspaper at my expense in accordance with Section 10.05(3)(b)(1) of the Wetlands Protection Act regulations.

Signature of Applicant

Date

Signature of Representative (if any)

Date

2 SUPPLEMENTAL INFORMATION

2.1 INTRODUCTION

The purpose of this project is to investigate a section of MWRA's sewer infrastructure so repairs can be made (if needed) before a breach of the infrastructure occurs.

The Massachusetts Water Resource Authority (MWRA) owns and maintains a 120-year old, 16-foot diameter trunk sewer pipeline in the Belle Isle Marsh Reservation adjacent to Saratoga Street in East Boston (the "Site"); Section 7 of the North Metropolitan Trunk Sewer. (See Appendix A. Figure 1. Project Locus, and Figure 2. Aerial View of Site). The sewer is constructed of brick and concrete, and it conveys sewage flow to the Deer Island Wastewater Treatment Plant. The pipeline includes a large "sandcatcher" structure, consisting of a chamber with four access manholes on top. The structure was originally designed to retain grit in the chamber prior to sewage flow entering three smaller siphon pipelines under the Belle Isle Inlet.

A fracture on the exposed northern side of the Sandcatcher structure was observed by the MWRA in the winter of 2018 during a routine inspection of the structure. Additionally, the concrete slab on the surface of the structure appears to dip and shift to the north approximately 10' west of the eastern limit of the structure, and cracking through the thickness of the slab is apparent on the northern side. The MWRA performed exploratory core testing of the brick exterior of the northern side of the structure in several locations along the alignment of the exposed fracture. The core testing determined the approximate depth of the exposed fracture to be 15-inches. The depth of the crown of the structure where the fracture exists is 21-inches. The MWRA also conducted an internal closed-circuit television (CCTV) inspection of the sandcatcher structure and the upstream 16-foot diameter trunk sewer pipeline in the Winter of 2018 and no major structural defects were observed during the inspection. Therefore, an investigation into the extent of the fracture on the crown of the northern side of the structure and the presence of any additional structural defects is required. Observations from the site investigation will inform subsequent recommendations to repair the structural defects.

2.2 PROPOSED PROJECT

The main activity associated with this proposed project is a site investigation to evaluate the subsurface extents of the fracture on the northern side of the sandcatcher structure, and the possible presence of additional structural defects on the northern and southern sides of the structure. The MWRA, under the direction of Kleinfelder, intends to perform four (4) field test pits, to complete an evaluation of the structure. The MWRA will complete

two test pits on both the north and south sides of the structure. (See Appendix A, Figure 3 for proposed test pit locations.)

Northern Test Pits

The northern side of the structure will be difficult to access with a machine to facilitate excavation of a longitudinal test pit due to significant erosion. Test pits will need to be excavated perpendicular to the structure with the machine sitting on top of it and must be conducted when the tide is low. Early or extended shifts may be required to conduct the test pit activities during low water. The first proposed northern test pit is located just west of the visible limit of the fracture, approximately 30' east of the western limit of the structure. The purpose of the test pit is to determine whether or not the fracture continues outside the immediate area of erosion. The second proposed northern test pit will be located approximately mid-way between the first test pit and the end of the structure. This proposed location may be expanded slightly to the east or west as necessary to locate the limit of the fracture.

Southern Test Pits

Two additional test pits are proposed on the southern side of the structure to determine if there is a second fracture similar to the one on the northern side. Both pits are proposed to be excavated above the staked "bank" line to alleviate impact to wildlife. The third proposed test pit is near the eastern limit of the structure, approximately 10' west. The fourth proposed test pit will roughly mirror the first, conducted on the north side of the structure, and should be sited clear of the abandoned overflow structure to minimize any impact of the excavation on the structure.

The MWRA intends to dig and backfill the test pits the same day. Although dewatering is unlikely, if it is necessary to complete the work mud pumps and sedimentation bags will be used to filter sediment prior to discharging the water into the sandcatcher structure.

2.3 WETLAND RESOURCES

Belle Isle Marsh has been designated as Area of Critical Environmental Concern (ACEC) by the Massachusetts Executive Office of Energy and Environmental Affairs (EEA). The Site is located within the coastal floodplain (AE Zone) with a Base Flood Elevation at 12' (NAVD 88), according to the Federal Emergency Management Agency's National Flood Hazard Layer (FIRM Panel 25025C, 2016). Please see Appendix A. Figure 4. Wetland Resource Maps.

Kleinfelder contracted WSP and their subcontractor, Mason Associates, to perform a site survey and wetland delineation, which was conducted on May 9, 2019. The field survey plan and wetland investigation report are included in Appendix B and C respectively.

This segment of the ACEC – within the project site - contains series of coastal wetland resources including Tidal Flats, Salt Marsh, Coastal Bank, and Land Subject to Coastal Storm Flowage. These wetlands are subject to the Massachusetts Wetlands Protection Act (WPA) and associated Wetlands Regulations (310 CMR 10.00, the "Regulations"). Wetland resources were identified in accordance with criteria and guidance developed by the Massachusetts Department of Environmental Protection (MassDEP), which was also checked against MassGIS spatial data, and ground-truthed via a visual site inspection (see Appendix A. Figure 5. Existing Conditions Photographs). The ACEC appears to be thriving, despite the urban setting and degradation from nearby land uses. Several waterfowl species (snowy egret, red winged blackbird, sparrows, osprey) were observed within the adjacent marsh, as well as the presence of shellfish (clams, blue mussels).

The following sub-sections include a description of each wetland resource area and the significance of each resource in terms of WPA interests.

2.3.1 Land Subject to Coastal Storm Flowage (310 CMR 10.04)

According to the Regulations, Land Subject to Coastal Storm Flowage is defined as: "land subject to any inundation caused by coastal storms up to and including that caused by the 100-year storm, surge of record or storm of record, whichever is greater." As previously noted, the Site is located within the AE Zone and therefore is subject to the 100-year storm and includes the LSCSF resource area. On the Site, this area includes all the resources described in the following sections, as well the upland area adjacent to these resources.

2.3.2 Coastal Beach (310 CMR 10.27)

The Regulations define Coastal Beach as: "unconsolidated sediment subject to wave, tidal and coastal storm action which forms the gently sloping shore of a body of salt water and includes tidal flats. Coastal beaches extend from the mean low water line landward to the dune line, coastal bank line or the seaward edge of existing human-made structures, when these structures replace one of the above lines, whichever is closest to the ocean."

The Coastal Beach resources at the Site are primarily comprised of Tidal Flats present below mean high water (MHW). Tidal flats along the northeastern and eastern portions of the Site are located under placed riprap, as shown on the Appendix B. Survey Site Plan. According to the regulations, Tidal Flat is defined as: "any nearly level part of a coastal beach which usually extends from the mean low water line landward to the more steeply sloping face of the coastal beach or which may be separated from the beach by land under the ocean." These resources are expected to be significant to

the protection of marine fisheries and wildlife habitat, storm damage prevention and flood control , unless significant degradation occurs, resulting in a loss of these these services. While the Tidal Flat resources at the Site have been degraded via installed structures and other alterations through time, the resources still appear to be providing these services. Rockweed was found to be present along the riprap indicating the presence of marine organisms.

2.3.3 Coastal Bank (310 CMR 10.30)

The Regulations define this resource area as: “the seaward face or side of any elevated landform, other than a coastal dune, which lies at the landward edge of a coastal beach, land subject to tidal action, or other wetland.” On the Site, the Coastal Bank is located landward of the present salt marsh and tidal flats resource areas, as shown in Appendix C. The condition of the Bank is fair in that it has been highly altered, particularly when the berm and sandcatcher were constructed in the late 1800’s. The majority of the Coastal Bank is currently comprised of riprap stone that was used to stabilize the sandcatcher structure. High marsh grasses such as Salt grass (*Distichlis spicata)* and Switch grass (*Panicum virgatum*), and wrack line debris are also present along the Bank.

2.3.4 Salt Marsh (310 CMR 10.32)

The Regulations define Salt Marsh as: “coastal wetland that extends landward up to the highest high tide line, that is, the highest spring tide of the year, and is characterized by plants that are well adapted to or prefer living in, saline soils.” Salt Marsh resources are present at the site up to MHW, as noted in the wetland delineation report (Appendix C) and shown on the Survey Site Plan (Appendix B). Salt marsh vegetation; salt hay or Saltmeadow hay (*Spartina Patens),* and smooth cordgrass (*Spartina Alternaflora*) were present within the marsh area. Glasswort (*Salicornia spp.*) was identified along the southern salt marsh resource area in the transition zone to tidal flat.

Remnants of salt marsh grasses were found within the higher portions of the northern Coastal Bank and atop the sandcatcher structure indicating a presence of salt marsh growth at these higher elevations. However, this marsh has severely eroded over time and wedges of vegetated peat that have sloughed-off are still present along portions of the Coastal Bank.

2.4 TEMPORARY IMPACTS

The proposed Project will not result in permanent impacts, as the work is limited to a site investigation to evaluate the subsurface extents of the fracture on the northern side of the sandcatcher structure, and the possible presence of additional structural defects on the northern and southern sides of the structure. The work will include test pit excavation (approx. 8 feet in diameter) for viewing the structure and replacing sediment in-kind.

Table 1: Temporary Impacts

Resource	Project Activities	Impact	Type
LSCSF / Coastal Bank	Excavation of 4 test pits	Removal and replacement of sediment	Temporary
Salt Marsh / Tidal Flats	None	Potential sedimentation from test pit installation	Temporary

A description of specific Project activities within each resource area, resulting impacts, and compliance with relevant performance standards are explained in the following sub-sections. Mitigation of resource impacts are explained in Section 2.5.

2.4.1 Land Subject to Coastal Storm Flowage

While there are currently no performance standards associated with LSCSF, the MWRA recognizes the importance of this resource area for storm protection. Project activities will not result in adverse effects to storm damage prevention or flood control, as there will be no long-term changes to the land's ability to provide this service. Excavated sediment will be returned to its original location along the Coastal Bank, and there will be no changes to flood storage volume or recharge capacity within the upland.

2.4.2 Coastal Beach (Tidal Flats)

There is no proposed work to be conducted within Tidal Flat resources. All work is proposed to occur within Coastal Bank resources and therefore, the Project activities will not result in permanent changes in:

- Water circulation – investigation is limited to the Coastal Bank and not within Tidal Flats; or

- Water quality - investigation is limited to the Coastal Bank and not within Tidal Flats, and the potential for water column turbidity created by test pit work will be mitigated.

There were no specified habitat sites of rare vertebrate or invertebrate species identified at the Site (via procedures established under 310 CMR 10.37), and therefore; no adverse impacts to said species will occur.

There is always a potential for temporary sedimentation to occur within resources adjacent to the project work, due to the nature of soil disruption. However, MWRA is committed to minimizing and/or avoiding these impacts via the use of erosion and sedimentation control, as described in section 2.5.

2.4.3 Coastal Bank

Project activities are centralized within this resource area but will not result in permanent impacts. As previously described, sediments removed from the bank for the test pit investigation will be immediately replaced in the original location upon completion of the examination.

These activities will not have an adverse effect due to wave action on the movement of sediment from the Coastal Bank to Tidal Flats as the work will be conducted at low tide to avoid contact with tidal waters, and erosion and sedimentation controls will be utilized, as described in Section 2.5.

Test pits will be excavated down to less than 8 feet, only long the side of the sandcatcher structure, and therefore will not result in adverse effects on the stability of the coastal bank.

2.4.4 Salt Marsh

While Project activities are not proposed to occur directly within thriving salt marsh resources, these activities will occur within 100 feet of a salt marsh. Additionally, the test pit locations will coincide with a small portion of eroded salt marsh vegetation. Therefore, the investigation project was designed not to have an adverse effect on the productivity of the existing salt marsh. As previously explained, the test pitting is limited to the Coastal Bank resource area and therefore will not adversely affect existing salt marsh resources. Excavated Bank material will be immediately replaced within its original location upon work completion, thereby reducing potential adverse impacts to the sliver of salt marsh vegetation growing on top of, and adjacent to, the sandcatcher structure.

2.5 MITIGATION

In summary, the proposed Project will not result in permanent impacts to coastal wetland resources. Temporary impacts will be avoided and/or minimized via the following measures:

1. All project activities will occur during the immediate hour(s) before and after the lowest tide, according to National Oceanic and Atmospheric Administration tide gauge records (see Appendix D);

2. Sedimentation and erosion control best management practices will be utilized at the Site, including staked straw wattles surrounding the work area.

3. If the work requires removal of identified high marsh or low marsh vegetation in any location, the site will be stabilized and restored. Bank vegetation for planting will be determined in consultation with the City of Boston Conservation Commission upon completion of the test pitting and any subsequent rehabilitation work on the sandcatcher structure.

APPENDIX A. FIGURES

Figure 1 – Project Locus

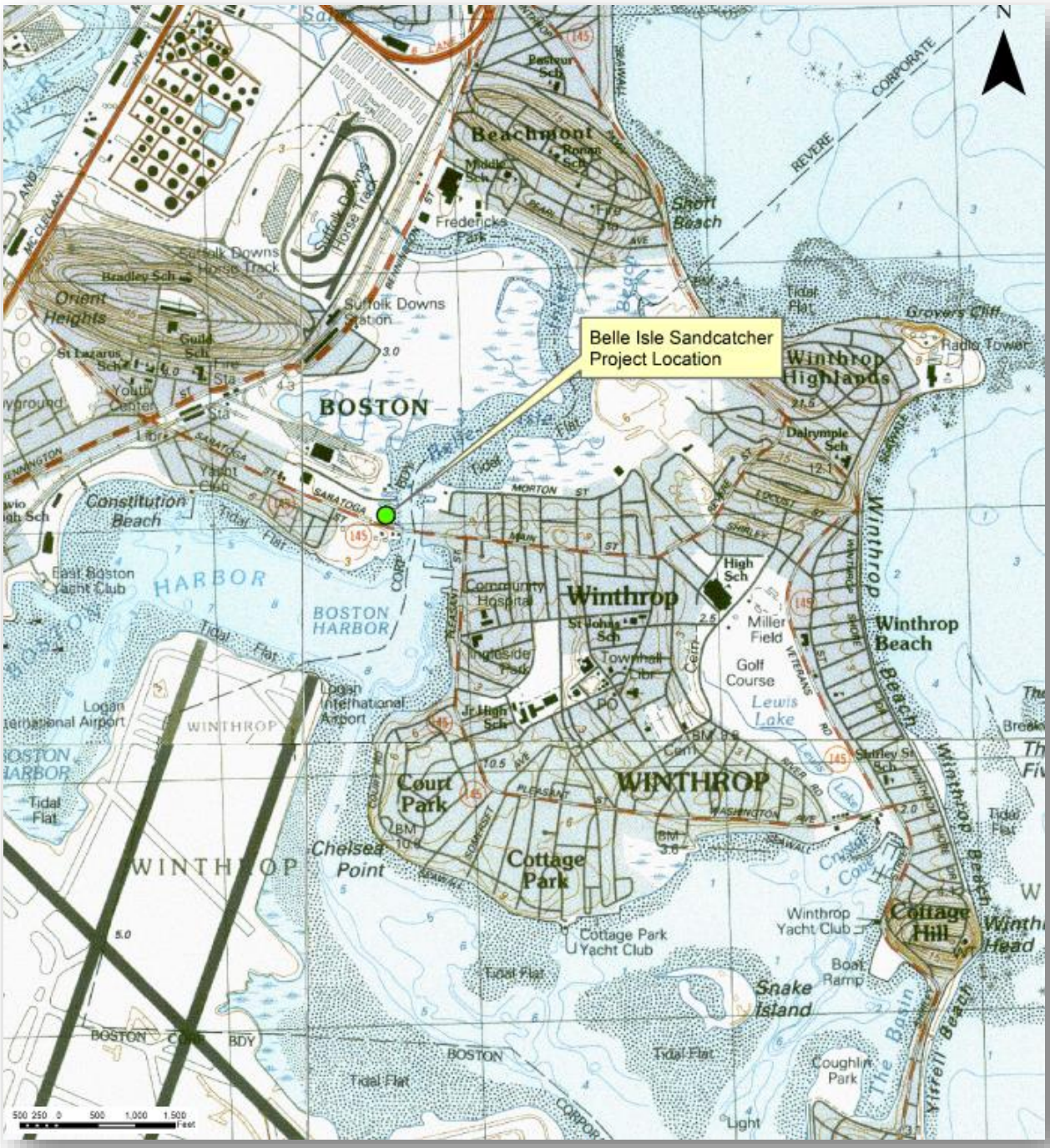
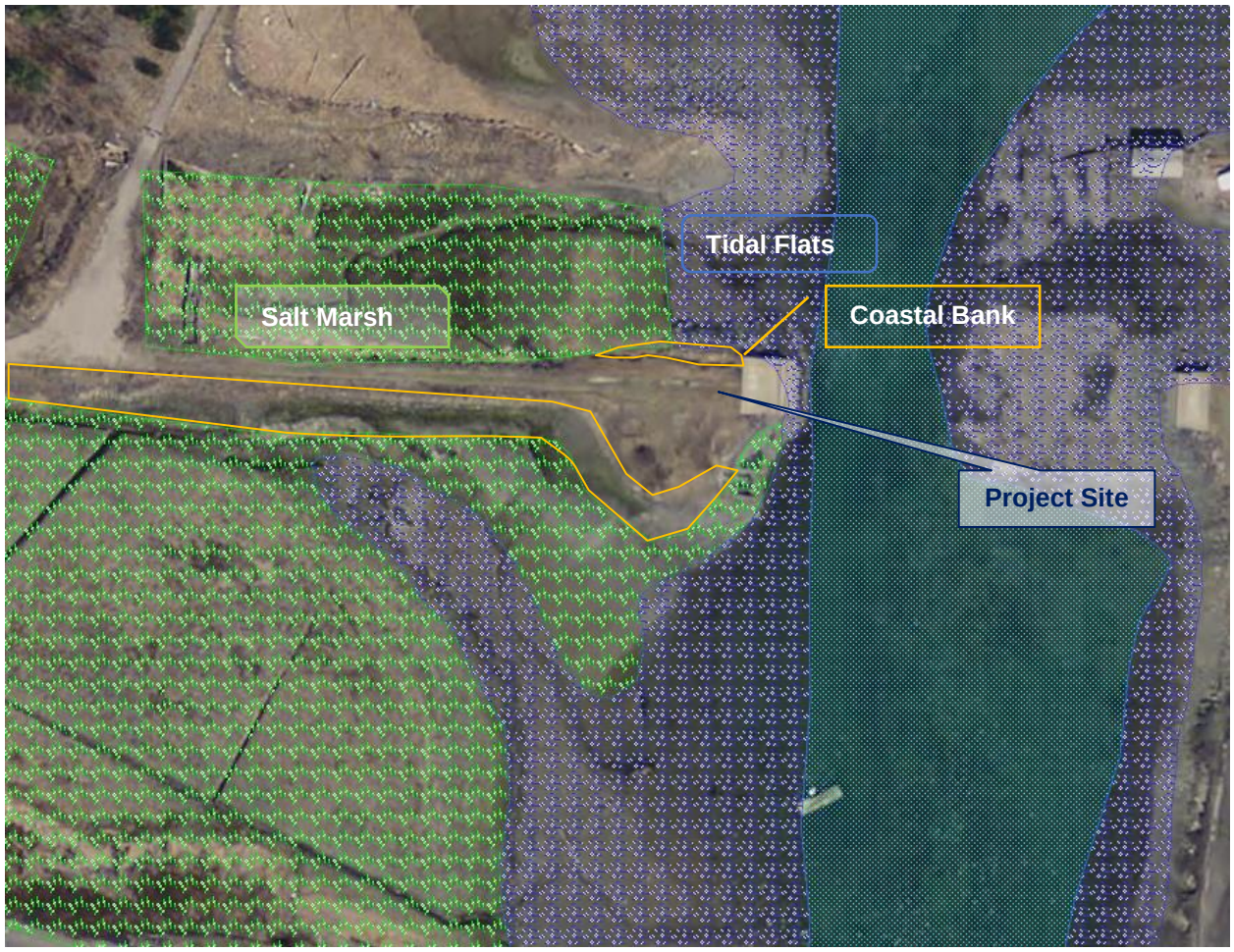


Figure 2 – Aerial Site View

Figure 3 – Proposed Test Pit Locations

Figure 4 – Wetland Resources



Project # 20191016.012-A

FIGURE 4. WETLAND RESOURCES

1. Exposed Fracture on North side of Sandcatcher Structure

2. Core Sampling Location (approximately 15-inch deep fracture)

3. Berm (facing east)

4. Southern Salt Marsh Area (facing east)

FIGURE 5. EXISTING CONDITION PHOTOGRAPHS

5. Southern Coastal Bank (facing north)

6. Northern Coastal Bank (facing south)

FIGURE 5. EXISTING CONDITION PHOTOGRAPHS

7. Northern Coastal Bank (facing west)

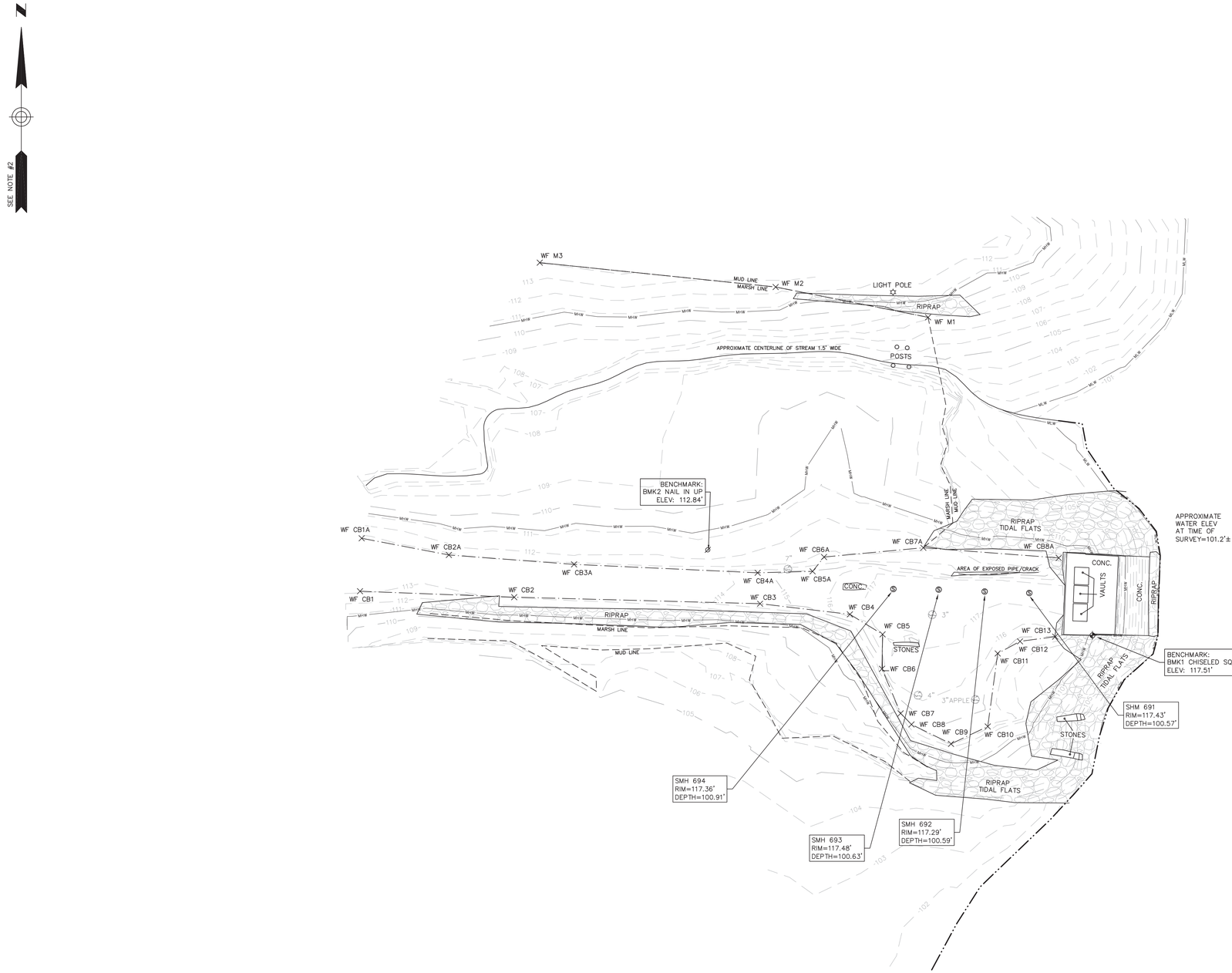
8. Northern Coastal Bank (facing east)

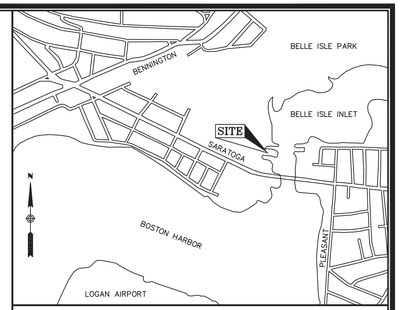
FIGURE 5. EXISTING CONDITION PHOTOGRAPHS

9. Northern Coastal Bank (facing south)

10. Northern Coastal Bank and Tidal Flats (facing east)

APPENDIX B. SITE SURVEY AND RECORD PLANS





LOCUS MAP
(N.T.S.)

NOTES

1. THIS PLAN IS PREPARED FROM AN ACTUAL ON-THE-GROUND FIELD SURVEY CONDUCTED BY WSP ON MAY 9, 2019.
2. THE BEARING SYSTEM SHOWN HEREON IS REFERENCED TO THE NORTH AMERICAN DATUM OF 1983, MASSACHUSETTS STATE PLANE MAINLAND COORDINATE SYSTEM AND WAS ESTABLISHED UTILIZING RTK GPS SURVEY TECHNIQUES REFERENCING THE MACORS GPS NETWORK.
3. VERTICAL DATUM REFERENCES METROPOLITAN DISTRICT COMMISSION (MDC) SEWERS DATUM. THE NAVD88 VERTICAL DATUM WAS ESTABLISHED ON SITE UTILIZING RTK GPS SURVEY TECHNIQUES REFERENCING THE MACORS GPS NETWORK; CONVERTED TO NGVD 29 (NAVD88 + 0.8') USING CORPSCON VERSION 6.X AND CONVERTED TO THE MDC DATUM (NGVD 29 + 105.62).
4. THE MEAN HIGH WATER AND MEAN LOW WATER ELEVATIONS WERE TAKEN FROM THE WEBSITE: https://tidesandcurrents.noaa.gov/datums.html DATUMS FOR 8443970, BOSTON, MA. (NAVD88 MHW=4.33'; MLW=-5.16') (MDC MHW=110.75'; MLW=101.26')
5. THE WETLANDS SHOWN HEREON WERE FLAGGED BY MASON & ASSOCIATES, INC. IN MAY OF 2019.

UTILITY STATEMENTS

THE LOCATION OF THE UTILITIES AS SHOWN HEREON HAVE BEEN COMPILED FROM VISIBLE STRUCTURES ONLY. THE ACTUAL LOCATION OF ALL UTILITIES AND UNDERGROUND STRUCTURES SHALL BE CONSIDERED APPROXIMATE AND SHALL BE VERIFIED BY THE OWNER PRIOR TO ANY CONSTRUCTION. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICES OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED.

LEGEND

- SEWER MANHOLE
- UTILITY POLE
- DECIDUOUS TREE
- POST
- LIGHT POLE
- BENCHMARK
- MARSH AND/OR MUD LINE
- CENTERLINE OF STREAM
- MEAN HIGH WATER (SEE NOTE #4)
- MEAN LOW WATER (SEE NOTE #4)
- INTERMEDIATE CONTOURS
- INDEX CONTOURS
- WETLAND LINE (WF CB7)
- RIPRAP

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

REVISION	
DATE	DESCRIPTION
--/--/--	---

BELLE ISLE SANDCATCHER STRUCTURE SURVEY

BELLE ISLE INLET
BOSTON-WINTHROP, MASSACHUSETTS
PREPARED FOR
KLEINFELDER

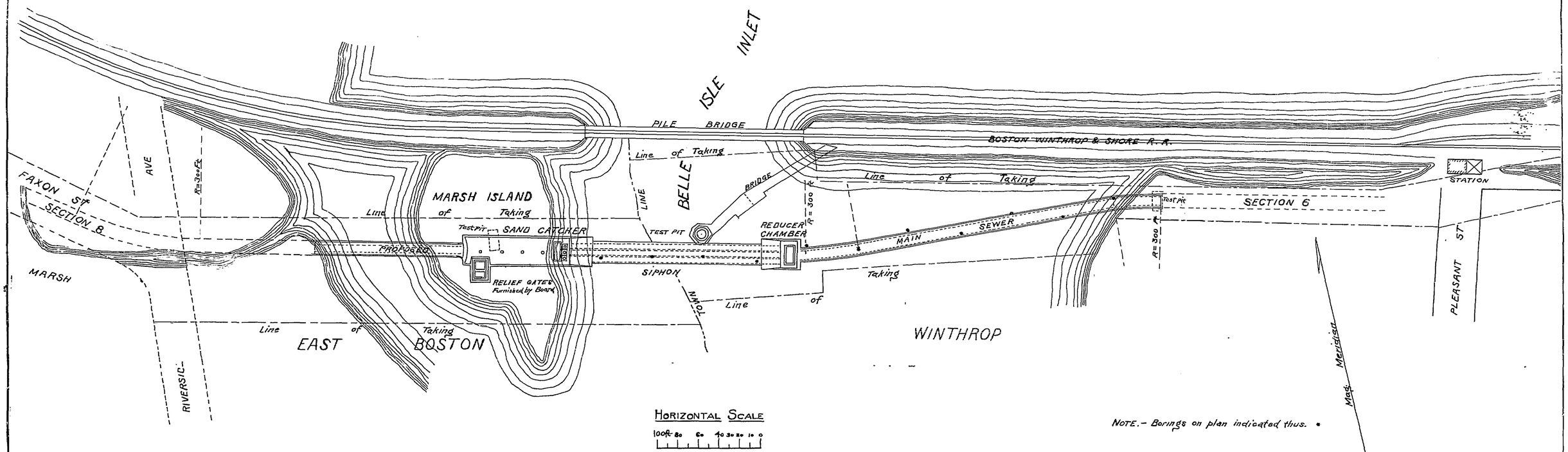
COMMONWEALTH OF MASSACHUSETTS
DAVID P. PRINCE
No. 52328
PROFESSIONAL LAND SURVEYOR

DAVID P. PRINCE, P.L.S. DATE: 06/04/2019
REG. NO. 52328
WSP USA, Inc.

WSP USA Inc.
9 Executive Park Dr, Suite 101
Merrimack, NH 03054
603.595.7900

Drawn By	ES	Date	Job No.
Surveyed By	TO RZ	MAY 20, 2019	190132L
Checked By	DPP	Scale	Sheet No.
Book No.	M-1 PG 128	1" = 20'	1 OF 1

190132L-1.dwg



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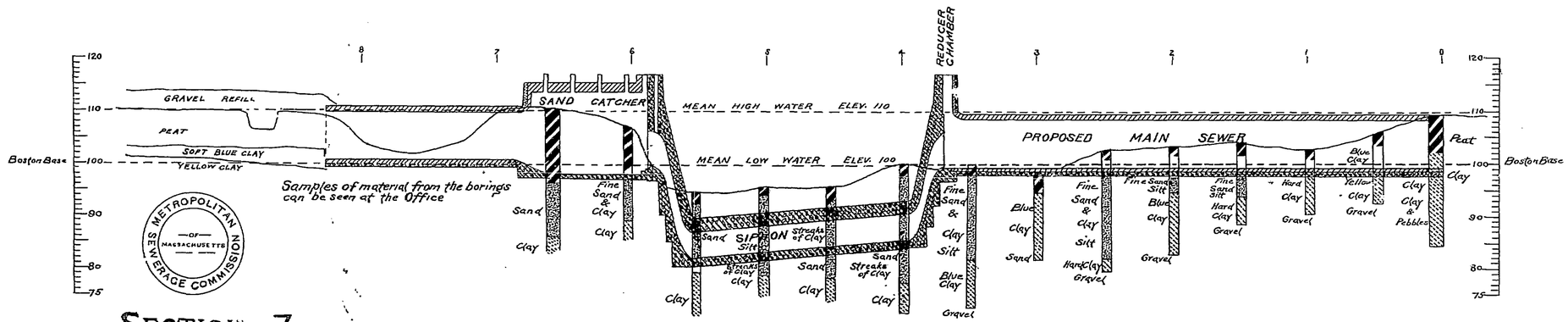


SECTION 7

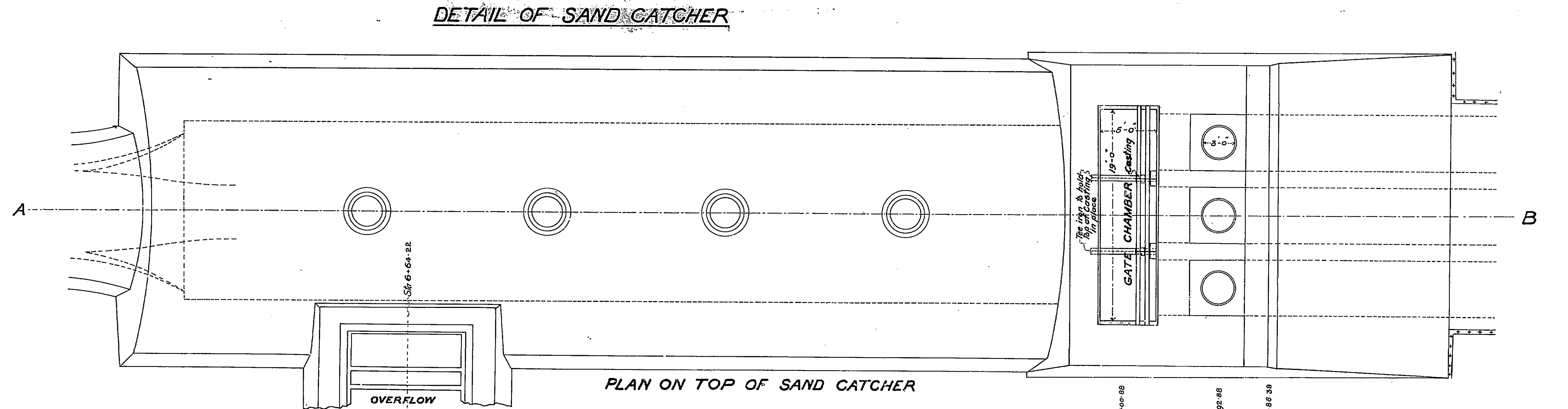
METROPOLITAN SEWER

BELLE ISLE INLET

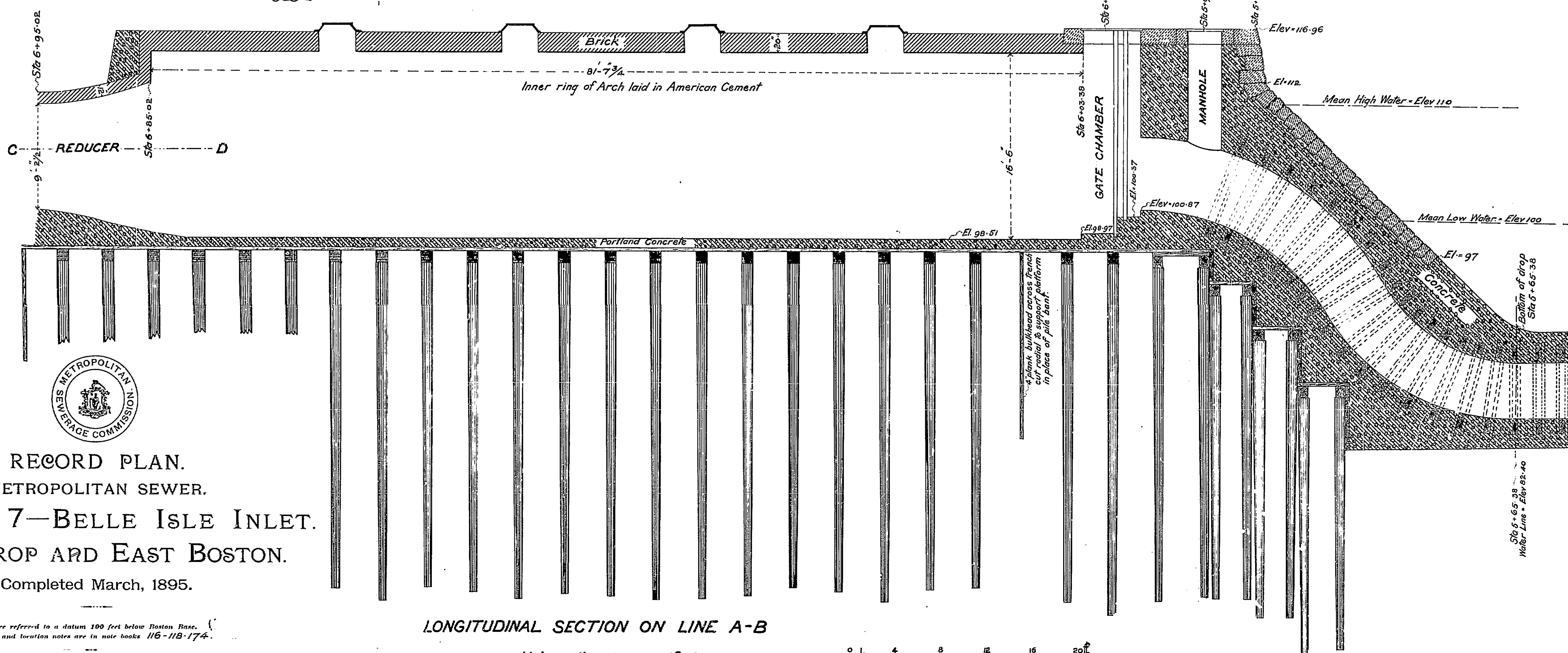
June 1892

NOTE - The Commissioners do not warrant the Borings to be correct

SHEET 1
RHS
4918-1



PLAN ON TOP OF SAND CATCHER



LONGITUDINAL SECTION ON LINE A-B

METROPOLITAN SEWERAGE COMMISSION

RECORD PLAN.

METROPOLITAN SEWER.

SECTION 7—BELLE ISLE INLET.

WINTHROP AND EAST BOSTON.

Completed March, 1895.

Elevations are referred to a datum 100 feet below Boston Base.
Construction and location notes are in note books 116-118-174.

Plan drawn by W.J.W; R.H.S. Examined and verified by [signature]

[signature] Chief Engineer.

Unless otherwise specified
Portland Cement was used

0 2 4 6 8 10 12 14 16 18 20 ft
SCALE

3

SEC. 7-3

4979-31

APPENDIX C. WETLANDS DELINEATION REPORT

MASON & ASSOCIATES, INC.
Environmental Consulting & Projects
771 Plainfield Pike, North Scituate, RI 02857
Tel. (401) 647-3835 Fax (401) 647-5430

May 28, 2019

David Prince, PLS
WSP USA
9 Executive Park Drive
Suite 101
Merrimack, NH 03054

Subject: Wetland Consulting Services
Belle Island Sandcatcher Repair Project
East Boston, MA 02128

Dear Mr. Prince:

This letter presents my findings regarding wetlands investigation for the proposed Belle Island Sandcatcher repair project located north of Saratoga Street in East Boston, Massachusetts (Figures 1 & 2). The wetland delineation was done in accordance with the Massachusetts Wetlands Protection Act (WPA) (MGL Chapter 131, Section 40) and regulations pertaining to vegetated wetlands contained in 310 CMR 10.55. Field delineation procedures follow Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetland Protection Act - A Handbook, by the Massachusetts Department of Environmental Protection, March 1995. It does not appear that the City of Boston has separate Wetland By-laws. My qualifications include over 22 years' experience in the practice of wetland science, as a Professional Soil Scientist with the Society of Soil Scientists of Southern New England (SSSSNE) and a Professional Wetland Scientist (#2010) certified by the Society of Wetland Scientists (SWS).

I conducted the site reconnaissance and delineation for wetlands on May 9, 2019. On this day, I delineated a coastal wetland within the project area. Wetland flag series CB1 – CB13 and CB1A – CB8A (ExT1 – ExT2 included, see below) indicated the delineated limits of the coastal wetland. The following table identifies the specific characteristic of flags:

Flag Series	Description
CB1 – CB3 & CB1A – CB6A	Edge of high salt marsh at gravel access road
CB3 – CB8	Top of Coastal Bank (north side, 3:1 or steeper)
CB8 – CB10	Top of bank (rip rap/cobble-gravel shore)
CB10 – CB13	Small area of high salt marsh
CB6A – CB8A*	Top of Coastal Bank (south side)
ExT1 – ExT2*	Top of presumed eroded bank, see below

*An area of erosion has taken place in recent years; I identified the existing top of eroded bank with flags ExT1 and ExT2, where ExT1 connects with flag CB6A. I identified the assumed original edge of the coastal bank with flag numbers CB6A to CB8A – these flag locations were established based on observations of the original wood wall at these flags and reviewing the present fill limits on the south side to the concrete structure at flag CB13.

Within the project area, the limits of salt marsh, tidal flat (mudflat) and rip rap bank were identified by walking with the surveyor and locating each edge of these features (flags were not established in

the field for these features). The salt marsh includes high and low marsh areas. Vegetation observed in the salt marsh and at its landward edge includes saltwater cordgrass (*Spartina alterniflora*), saltmeadow cordgrass (*Spartina patens*), seaside goldenrod (*Solidago sempervirens*) and single beach plum (*Prunus maritima*) and hawthorn (*Crataegus monogyna*) specimens. The USDA Web Soil Survey depicts the salt marsh to be underlain by a hydric Ipswich mucky peat, subject to tidal inundation.

The area of upland consists of the gravel access road and the land associated with the sandcatcher (previously filled for the sandcatcher and drain line construction). Vegetation is sparse and is primarily limited to roadside weeds and grasses, including evening primrose (*Oenothera biennis*), dandelion (*Taraxacum officinale*) and cinquefoil species (*Potentilla* sp.). As previously mentioned, the beach plum and hawthorn occur in upland, at the edge of the coastal wetland.

Several species of wildlife were observed utilizing the marsh and edge habitat, including American goldfinch, snowy egret, red-winged blackbird, sparrow species, gulls and bumblebee. An American black duck was observed nesting at the edge of the marsh and access road (CB'A' series), and there is an osprey nest north of the project area.

Finally, there are no MADEP ('MassGIS 'Oliver' accessed May 8, 2019) mapped Estimated or Priority Habitats of Rare Wildlife, or Certified or Potential Vernal Pools on site or close by. Oliver does identify the onsite wetlands and northern adjacent Belle Isle Marsh Reservation as an Area of Critical Environmental Concern (ACEC).

I would request that a progress plan be forwarded to me as soon as all wetland edge flags and identified wetlands have been located on site plans. This will allow me the opportunity to review the plan and wetlands and provide suggested edits or comments if necessary.

Please note that the information provided herein represents the best professional judgment of Mason & Associates, Inc., and should not be construed to represent the finding of any regulatory agency. Please contact me at (401) 647-3835 if you have any questions regarding this work, or if you require additional information.

Sincerely yours,
MASON & ASSOCIATES, INC.

Joseph P. McCue
Senior Environmental Scientist

Attachments - Figure 1: Site Location
Figure 2: Approximate Location of Wetlands

Sources: 2018 USGS Topographic Map, Lynn, Massachusetts

Approximate Location of:

Project Area

N

0 2,000 Feet

Approximate Scale

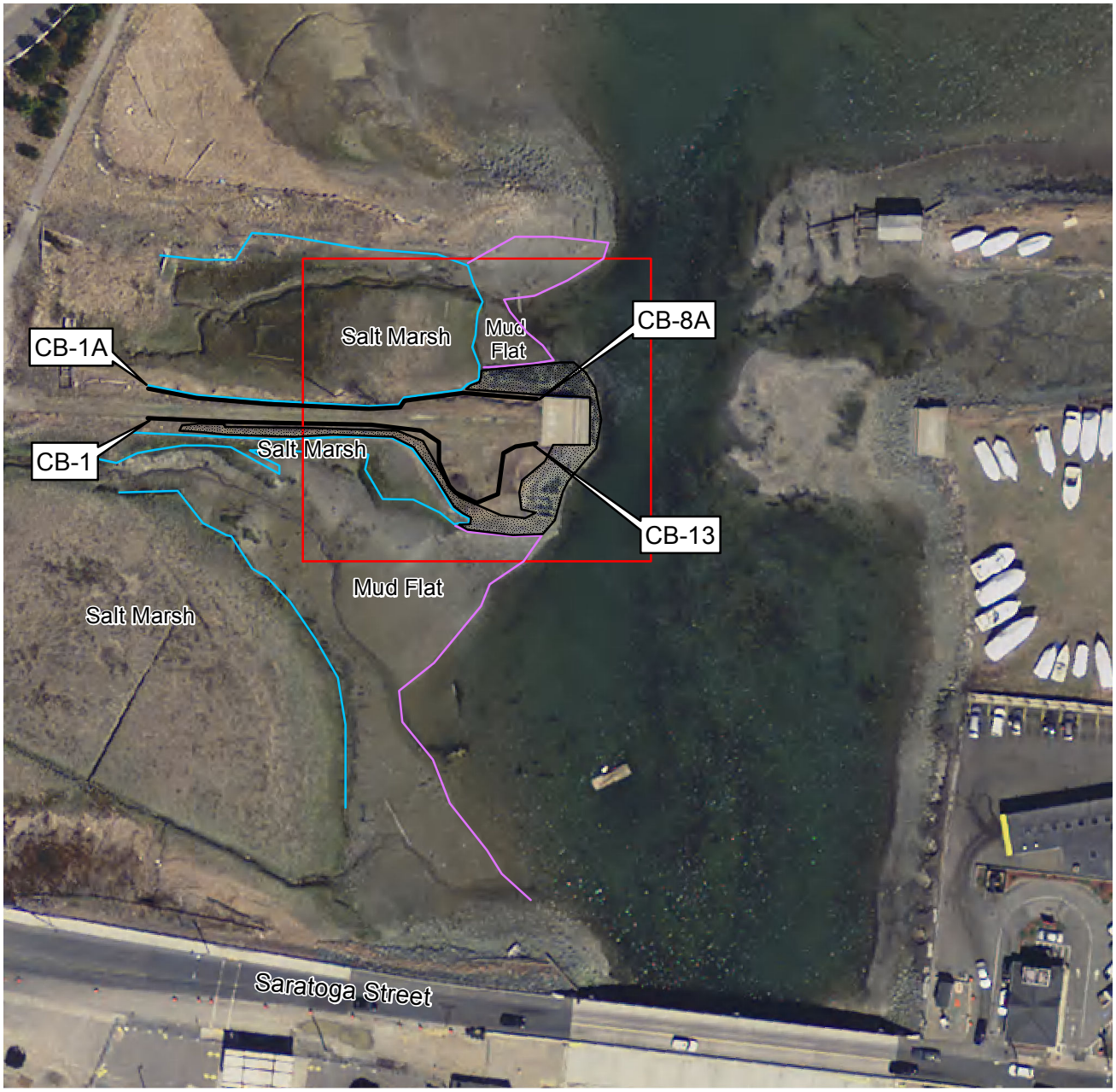
Belle Isle Sandcatcher Project
East Boston, Massachusetts

SITE LOCATION

MASON & ASSOCIATES, INC.
Environmental Consulting & Projects
219 East Main Street, Milford, Massachusetts 01757

Project No. 190501

Figure 1



Sources: 2013 MassDEP Digital Color Imagery; MassGIS NHESP.

Approximate Location of:

- Project Area
- Flagged Wetland Edge
- Salt Marsh (survey located)
- Mud Flat
- Boulders/rip-rap

N

0 100 Feet

Approximate Scale

Belle Isle Sandcatcher Project
East Boston, Massachusetts

SKETCH MAP OF APPROXIMATE WETLAND LOCATIONS

MASON & ASSOCIATES, INC.
Environmental Consulting & Projects
219 East Main Street, Milford, Massachusetts 01757

Project No. 190501

Figure 2

Appendix G

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Data Form

Applicant: _____ **Prepared by:** Mason & Associates, Inc. **Project location:** **Belle Isle Sandcatcher, East Boston** **DEP File #:** _____

Check all that apply:

- ☐ **Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only**
- ☑ **Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II**
- ☐ **Method other than dominance test used (attach additional information)**

Section I. Vegetation **Observation Plot Number:** **CB-3A** **Transect Number:** **Wetland** **Date of Delineation:** **5/9/19**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Tree				
None				
Saplings/Shrubs				
None				
Herbaceous				
Saltmeadow cordgrass/*Spartina alterniflora*	98	90	Y	OBL*
Seaside goldenrod/*Solidago sempervirens*	10.5	10	N	FACW*
Vines				
None				

Notes: Data plot occurs within a tidal marsh; the coastal wetland edge is the bank associated with a gravel access road.

*Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c. 131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:
Number of dominant wetland indicator plants: 1 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? YES

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology Plot CB-3A

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? Yes

title/date: websoilsurvey.nrcs.usda.gov

map number: Norfolk & Suffolk Counties

soil type mapped: Ipswich mucky peat

hydric soil inclusions:

Are field observations consistent with soil survey? YES

Remarks:
.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oei	0 – 20”	2.5Y 3/2	

Remarks: Tidal marsh

3. Other

Conclusion: Is this soil hydric? YES

Other Indicators of Hydrology: (check all that apply and describe)

- ☑ **Site inundated:** Tidal inundation
- ☑ **Depth to free water in observation hole:** 0”
- ☑ **Depth to soil saturation in observation hole:** 0”
- ☐ **Water marks:**
- ☐ **Drift lines:**
- ☐ **Sediment deposits:**
- ☐ **Drainage patterns in BVW:**
- ☐ **Oxidized rhizospheres:**
- ☐ **Water-stained leaves:**
- ☑ **Recorded data (stream, lake, or tidal gauge; aerial photo;other):**
- ☐ **Other:**

Vegetation and Hydrology Conclusion

	Yes	No
Number of wetland indicator plants ≥ number of non-wetland indicator plants	■	☐
Wetland hydrology present:		
hydric soil present	■	☐
other indicators of hydrology present	■	☐
Sample location is in a BVW	■	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent

Appendix G

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Data Form

Applicant: _____ **Prepared by:** Mason & Associates, Inc. **Project location:** **Belle Isle Sandcatcher, East Boston** **DEP File #:** _____

Check all that apply:

☑ **Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only**

☐ **Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II**

☐ **Method other than dominance test used (attach additional information)**

Section I. Vegetation **Observation Plot Number: CB-3A** **Transect Number: Upland** **Date of Delineation: 5/9/19**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Tree				
None				
Saplings/Shrubs				
None				
Herbaceous				
Dandelion/*Taraxacum officinale*	3	50	Y	FACU
Evening primrose/*Oenothera biennis*	3	50	Y	FACU
Grass species				
Vines				
None				

Notes: Data plot occurs within a gravel access road.

*Use an asterisk to mark wetland indicator plants: plant species listed in the Wetlands Protection Act (MGL c. 131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FAC+, FACW-, FACW, FACW+, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 0 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants? NO

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent

Section II. Indicators of Hydrology Plot CB-3A

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? Yes

title/date: websoilsurvey.nrcs.usda.gov

map number: Norfolk & Suffolk Counties

soil type mapped: Ipswich mucky peat

hydric soil inclusions:

Are field observations consistent with soil survey? No, see below

Remarks:
.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color

Remarks: No soil data plot performed; plot is within an existing gravel access road.

3. Other

Conclusion: Is this soil hydric? NO

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ **Site inundated:** _____
- ☐ **Depth to free water in observation hole:** _____
- ☐ **Depth to soil saturation in observation hole:** _____
- ☐ **Water marks:** _____
- ☐ **Drift lines:** _____
- ☐ **Sediment deposits:** _____
- ☐ **Drainage patterns in BVW:** _____
- ☐ **Oxidized rhizospheres:** _____
- ☐ **Water-stained leaves:** _____
- ☐ **Recorded data (stream, lake, or tidal gauge; aerial photo;other):**

_____

- ☐ **Other:** _____

Vegetation and Hydrology Conclusion

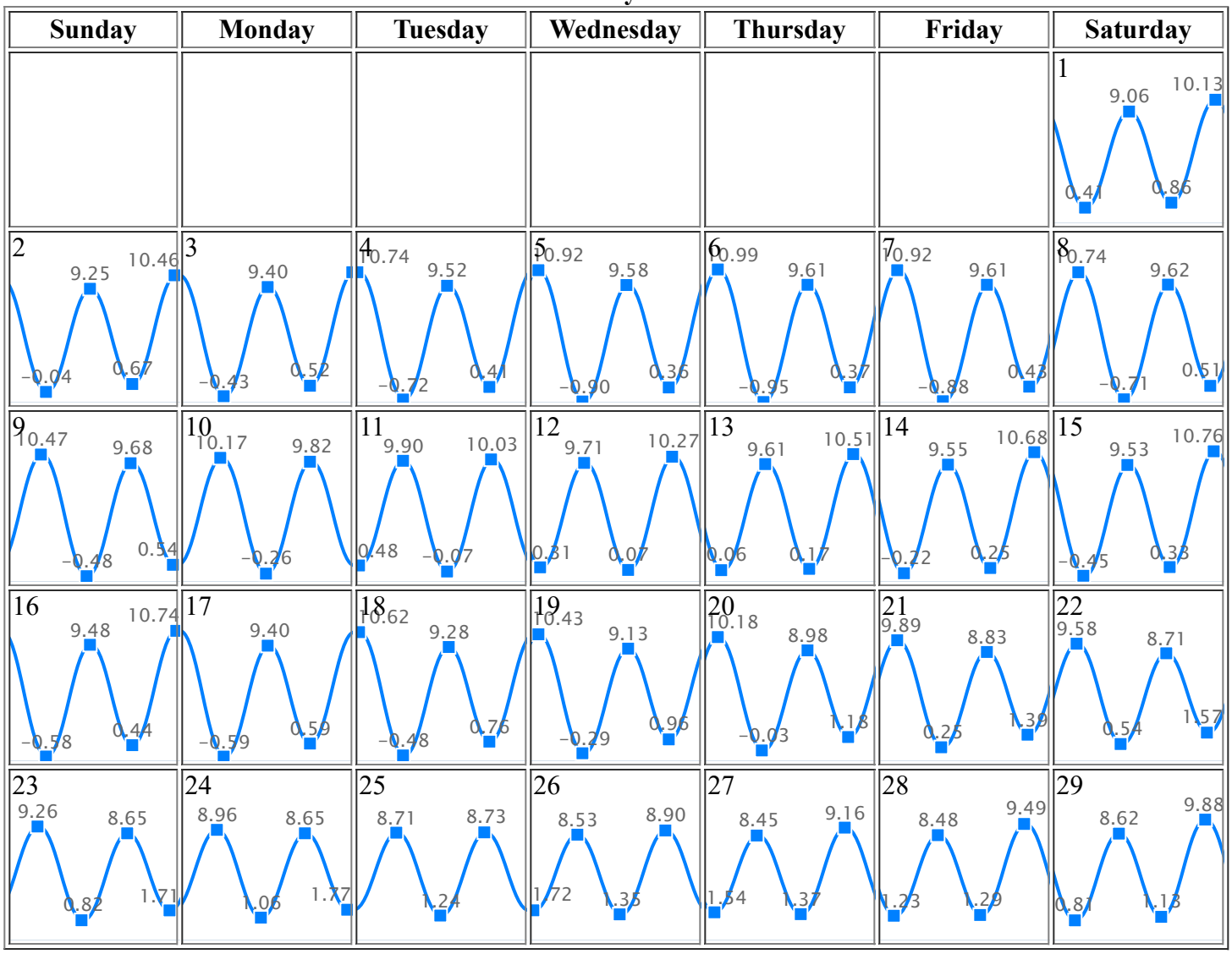
	Yes	No
Number of wetland indicator plants ≥ number of non-wetland indicator plants	☐	■
Wetland hydrology present:		
hydric soil present	☐	■
other indicators of hydrology present	☐	■
Sample location is in a BVW	☐	■

Submit this form with the Request for Determination of Applicability or Notice of Intent

APPENDIX D. TIDE CHART – BOSTON HARBOR

Help Print

NOAA/NOS/CO-OPS
Tide Predictions at 8444012, Deer Island (south end) MA
June 2019 Monthly Calendar View



Note: The interval is High/Low, the solid blue line depicts a curve fit between the high and low values and approximates the segments between.

Disclaimer: These data are based upon the latest information available as of the date of your request, and may differ from the published tide tables.

High/Low Tide Prediction Data Listing

Station Name: Deer Island (south end), MA
Action: Monthly
Product: Tide Predictions
Start Date & Time: 2019/6/1 12:00 AM
End Date & Time: 2019/6/30 11:59 PM

Source: NOAA/NOS/CO-OPS
Prediction Type: Subordinate
Datum: MLLW
Height Units: Feet
Time Zone: LST/LDT

Date	Day	Time	Hgt	Time	Hgt	Time	Hgt	Time	Hgt
2019/06/01	Sat	04:23 AM	0.41 L	10:36 AM	9.06 H	4:35 PM	0.86 L	10:48 PM	10.13 H
2019/06/02	Sun	05:08 AM	-0.04 L	11:21 AM	9.25 H	5:19 PM	0.67 L	11:30 PM	10.46 H
2019/06/03	Mon	05:53 AM	-0.43 L	12:06 PM	9.40 H	6:03 PM	0.52 L		
2019/06/04	Tue	12:14 AM	10.74 H	06:38 AM	-0.72 L	12:52 PM	9.52 H	6:49 PM	0.41 L
2019/06/05	Wed	12:59 AM	10.92 H	07:25 AM	-0.90 L	1:39 PM	9.58 H	7:36 PM	0.36 L
2019/06/06	Thu	01:46 AM	10.99 H	08:13 AM	-0.95 L	2:29 PM	9.61 H	8:27 PM	0.37 L
2019/06/07	Fri	02:37 AM	10.92 H	09:04 AM	-0.88 L	3:21 PM	9.61 H	9:20 PM	0.43 L
2019/06/08	Sat	03:31 AM	10.74 H	09:57 AM	-0.71 L	4:16 PM	9.62 H	10:16 PM	0.51 L
2019/06/09	Sun	04:29 AM	10.47 H	10:53 AM	-0.48 L	5:13 PM	9.68 H	11:16 PM	0.54 L
2019/06/10	Mon	05:29 AM	10.17 H	11:50 AM	-0.26 L	6:12 PM	9.82 H		
2019/06/11	Tue	12:18 AM	0.48 L	06:32 AM	9.90 H	12:48 PM	-0.07 L	7:11 PM	10.03 H
2019/06/12	Wed	01:21 AM	0.31 L	07:36 AM	9.71 H	1:46 PM	0.07 L	8:08 PM	10.27 H
2019/06/13	Thu	02:23 AM	0.06 L	08:38 AM	9.61 H	2:43 PM	0.17 L	9:04 PM	10.51 H
2019/06/14	Fri	03:22 AM	-0.22 L	09:37 AM	9.55 H	3:37 PM	0.25 L	9:56 PM	10.68 H
2019/06/15	Sat	04:17 AM	-0.45 L	10:33 AM	9.53 H	4:28 PM	0.33 L	10:46 PM	10.76 H
2019/06/16	Sun	05:08 AM	-0.58 L	11:24 AM	9.48 H	5:17 PM	0.44 L	11:33 PM	10.74 H
2019/06/17	Mon	05:56 AM	-0.59 L	12:12 PM	9.40 H	6:03 PM	0.59 L		
2019/06/18	Tue	12:18 AM	10.62 H	06:41 AM	-0.48 L	12:58 PM	9.28 H	6:48 PM	0.76 L
2019/06/19	Wed	01:02 AM	10.43 H	07:25 AM	-0.29 L	1:42 PM	9.13 H	7:32 PM	0.96 L
2019/06/20	Thu	01:45 AM	10.18 H	08:08 AM	-0.03 L	2:25 PM	8.98 H	8:17 PM	1.18 L
2019/06/21	Fri	02:29 AM	9.89 H	08:51 AM	0.25 L	3:08 PM	8.83 H	9:02 PM	1.39 L
2019/06/22	Sat	03:13 AM	9.58 H	09:34 AM	0.54 L	3:53 PM	8.71 H	9:48 PM	1.57 L
2019/06/23	Sun	04:00 AM	9.26 H	10:19 AM	0.82 L	4:38 PM	8.65 H	10:37 PM	1.71 L
2019/06/24	Mon	04:48 AM	8.96 H	11:05 AM	1.06 L	5:25 PM	8.65 H	11:28 PM	1.77 L
2019/06/25	Tue	05:39 AM	8.71 H	11:53 AM	1.24 L	6:13 PM	8.73 H		
2019/06/26	Wed	12:20 AM	1.72 L	06:31 AM	8.53 H	12:41 PM	1.35 L	7:01 PM	8.90 H
2019/06/27	Thu	01:14 AM	1.54 L	07:24 AM	8.45 H	1:31 PM	1.37 L	7:49 PM	9.16 H
2019/06/28	Fri	02:07 AM	1.23 L	08:17 AM	8.48 H	2:21 PM	1.29 L	8:37 PM	9.49 H
2019/06/29	Sat	02:58 AM	0.81 L	09:09 AM	8.62 H	3:10 PM	1.13 L	9:25 PM	9.88 H
2019/06/30	Sun	03:49 AM	0.33 L	10:00 AM	8.84 H	3:59 PM	0.89 L	10:12 PM	10.30 H