TOWN OF ESSEX
LAND USE APPLICATION
PART ONE

RECEIVED
MAY 20 2021
BY: KFB

PLEASE CHECK THE APPROPRIATE LINE(S) AND ATTACH THE APPROPRIATE APPLICATION(S):

SPECIAL EXCEPTION	____	VARIANCE/ APPEAL	____
SITE PLAN REVIEW	____	APPROVAL OF LOCATION	____
INLAND WETLANDS PERMIT	____	REGULATION TEXT AMENDMENT	____
INLAND WETLANDS PERMIT - AGENT APPROVAL	____	ZONE CHANGE	____
	____	COASTAL SITE PLAN REVIEW	X
WETLAND PERMIT TRANSFER	____	MODIFICATION OF PRIOR APPROVAL	____
SUBDIVISION / RESUBDIVISION	____	SPECIAL FLOOD HAZARD AREA PERMIT	____

PROJECT DESCRIPTION: This project is for remediation of contaminated soil on site.
Please see attached narrative

PROJECT NAME: _____

STREET ADDRESS OF PROPERTY 9 Ferry Street

ASSESSOR'S MAP 47 LOT 17 LOT SIZE 1.7 acres DISTRICT WF

APPLICANT Essex Boat Works
_____ PHONE _____

APPLICANT'S AGENT (if any) Emily Perko, GEI Consultants
_____ PHONE 860-368-5300

ENGINEER.SURVEYOR/ARCHITECT GEI Consultants
_____ PHONE 860-368-5300

Note:
1) TO BE ACCEPTED BY THE LAND USE OFFICE. THIS APPLICATION MUST BE COMPLETED, SIGNED, AND SUBMITTED WITH THE REQUIRED FEE(S) AND MAP(S) PREPARED IN ACCORDANCE WITH THE APPLICABLE REGULATIONS.
2) THE SUBMITTAL OF THIS APPLICATION CONSTITUTES THE PROPERTY OWNER'S PERMISSION FOR THE COMMISSION OR ITS STAFF TO ENTER THE PROPERTY FOR THE PURPOSE OF INSPECTION.
3) I HERBY TO PAY ALL ADDITIONAL FEES AND/OR ADDRESS SUCH COSTS DEEMED NECESSARY BY THE LAND USE OFFICE AS DESCRIBED IN PART THREE OF THIS APPLICATION.

APPLICATION FOR REVIEW OF COASTAL AREA MANAGEMENT SITE PLANS
Supplemental Information for Projects Located within the Coastal Boundary.*
Revised February 21, 2012

PART TWO

Please submit 12 copies of the completed application form (minus the Appendices) and associated site plans.

Name of Applicant: Essex Boat Works

Address: 9 Ferry Street

Telephone: 860-767-8276 **Email:** j.lewis@essexboatworks.com

Projects Address or Location: 9 Ferry Street

The following information must be supplied by the applicant and submitted in addition to: the application plans and data required for approval of the proposed project under the zoning and/or subdivision regulation of this municipality. Attach additional sheets if more space is required.

I. Plans

A. Project Plan (s)
This application must be accompanied by a plan (or plans) of the entire project indicating: 1) proposed location; 2) design of all existing and proposed buildings, structures, and uses; 3) all proposed site improvements or alterations; 4) ownership and type of use on adjacent properties.

B. Coastal Resources
This application must be accompanied by a plan showing the location of all coastal resources (as defined in C.G.S. Section 22a-93(7) Appendix A) on, and contiguous to the site. *

II. Written Information

A. Description of the Proposed Project
Describe the entire project including types of buildings and structures, uses, methods and timing of construction, type and extent of development adjacent to the site. This information should supplement and/or clarify plans in I.A above.

Please see attached narrative

* Coastal Boundary maps are on file at the Town Clerk's office and/or Zoning office.

B. Description of Coastal Resources

Identify the coastal resources on and contiguous to, the site (as shown on the coastal resources map) and describe their condition. This information should supplement and/or clarify the plan in I (B) above. Coastal Resources on which the project is located or which will be affected by the project (for more detail see CGS 22a-93(7) / Appendix A).

____ a. bluffs or escarpments ____ b. rocky shorefront

____ c. beaches and dunes ____ d. intertidal flats

____ e. tidal wetlands (describe briefly)

____ f. freshwater wetlands (describe briefly)

____ g. estuarine embayments X h. coastal flood hazard area

____ i. coastal erosion hazard area (describe briefly)

X j. developed shorefront (describe briefly)

____ k. islands ____ l. coastal waters

____ m. shorelands ____ n. shellfish concentration areas

Summary of adverse impacts on future water-dependent opportunities and activities, if any: (see Appendix C #17)

There are no adverse impacts anticipated.

C. Assessment of the suitability of the project for the proposed site and the capability of the resources to accommodate the proposed use.

1) Describe how the proposed project is consistent with the applicable coastal policies identified in CSG Section 22a-92(b)(1) & (2) attached as Appendix B. (i.e.; describe the extent to which the project complies or conflicts with the policy). Note: If a project conflicts with any policy, the project should be modified to reduce or eliminate the conflict.

The project is consistent with the policies and no negative impacts are anticipated. Please see attached narrative.

D. Evaluation of the potential, beneficial, and adverse impacts of the project and a description of proposed methods to mitigate adverse effects.

1) Identify and describe any potential adverse impacts (as defined in C.G.S. Section 22a-93 (15) Appendix C).

There are no adverse impacts as defined in Section 22a-93 (15)

2) Identify how stormwater will be treated and best management practices.

Best management practices will be adhered to, please see attached plans.

3) Identify all sedimentation and erosion controls and site restoration methods.

Best management practices will be adhered to, please see attached plans.

4) Potential beneficial impacts of the project on coastal resources.

Remediation of impacted soils.

5) **For Waterfront Property only:** Is the project a water-dependent use as defined in C.G.S. Section 22a-93 (16). Appendix C. If so, explain why:

This is not a water-dependent project.

6) **For Waterfront Property only:** Describe the impacts or effects (positive or negative) that the project will have on future water-dependent uses or development on, and adjacent to, the site. (Adverse impacts on future water-dependent development opportunities are described in C.G.S. Section 22a-93 (17). Appendix B

This project is not a water-dependent use and will have a positive impact through the remediation of impacted soil from the property.

7) Describe the proposed measures to mitigate (reduce or eliminate) any adverse impacts on coastal resources described in D (1) and, if applicable, on future water-dependent development opportunities described in D (6).

The project will not have any adverse impacts on coastal resources.

E. Demonstration of the acceptability of remaining or unmitigated adverse impacts on coastal resources and future water dependent uses and development.

(1) Describe any adverse impacts that remain after employing all reasonable mitigation measures.

The project will not have any adverse impacts on coastal resources.

(2) Explain why these remaining adverse impacts were not mitigated.

NA

(3) Explain why the Commission reviewing this application should find these remaining adverse impacts to be acceptable.

NA

III. SUPPORTING MATERIALS / DOCUMENTATION

A. <u>The Commission or Board may request the submission of such additional information that it deems necessary in order to reach a decision on the application.</u>

I/We certify that all the information on this application, including all accompanying documents, is correct as of the date below, and complete. I/ We certify that I/ We am/are the owner(s) of the premises described above, or the authorized agent of the owner(s) of said premises.

FOR OFFICIAL USE ONLY:

Application No. _____

Date received by ZEA: _____

Signed: _____
Owner(s) or Agent

Dated: _____

Commission Action _____ _____ _____
Approved Denied Date

GEI Consultants

Consulting Engineers and Scientists

May 20, 2021

Russell Smith
Planning and Zoning Commission
Essex Town Hall, 3rd Floor
29 West Avenue
Essex, CT 06426

Re: 9 Ferry Street- Coastal Site Plan Review

Dear Mr. Smith:

On behalf of the applicant, Essex Boat Works, GEI Consultants, Inc. (GEI) has prepared this document for to support the coastal site plan review. The following is a detailed description of the proposed remediation activities that are proposed for the 9 Ferry Street property. In addition, a brief history of the parcel is along with site description, surrounding property use, and methods and timing of construction are also provided.

PROJECT OVERVIEW

The 9 Ferry Street parcel was entered into the Connecticut Property Transfer Program (PTP) in February 2016 under a Form III and associated Environmental Condition Assessment Form (ECAF). The PTP requires the disclosure of environmental conditions when real properties and/or businesses ("Establishments") are transferred. The Connecticut Department of Energy and Environmental Protection (DEEP) delegated the Site to a Licensed Environmental Professional (LEP) for investigation and remediation.

The PTP requires that an establishment be fully investigated within 2 years of transfer, remediation initiated within 3 years of transfer and remediation completed and either a final or interim Verification submitted within 8 years of transfer.

Based on the findings from the investigation activities conducted at the Site, environmental impacts to soil and/or groundwater have been identified requiring remediation associated with the following areas of concern (AOCs):

- Former Drywells (AOC #2)
- Septic System and Leaching Field (AOC #3)
- Drum and Waste Container Storage Areas (AOC#6)

GEI Consultants, Inc.
455 Winding Brook Drive, Suite 201, Glastonbury, CT 06033
860.368.5300 fax: 860.368.5307

The remediation activities being proposed at the property is being conducted in conjunction with the PTP requirements.

SITE HISTORY

Essex Boat Works has occupied 9 Ferry Street for over 50 years. The original building on the property associated with the boat yard burned down in the 1960s. The historical layout included a large block of land and associated dock approximately 60 feet wide and extending between 70-80 feet into the Connecticut River. This block of land was excavated and removed in the 1960s. After the fire destroyed the previous building in the 1960s, the current 9 Ferry Street building was constructed in 1968.

The 9 Ferry Street parcel is improved with a 35,780 square foot commercial building which covers much of the western portion of the property. The building is comprised of an interior building and an interior covered parking space. The interior building, has first, second and third floor sections, . Large overhead doors provide access to the boat and vehicle parking within the interior covered parking space.

Interior Building

A painting bay and a wood shop are located on the north side of the interior building. On the ground floor in the north-central portion of the interior building is a sales counter and parts room containing various boat maintenance products, restrooms, a miscellaneous storage area for paint and other supplies, and an employee locker room. A boat painting bay and a woodworking shop is located within the southern section of the building. These areas have concrete floors, except the woodworking shop which has a wood plank floor. The remainder of the ground floor exterior covered space is used for boat and vehicle parking and has an earthen floor covered with crushed stone. The second floor of the north-central portion of the interior building consists of office space, and miscellaneous storage. The third floor is unfinished storage space.

Yard

The entire Site is unpaved and is covered with crushed stone, including the boat and vehicle parking areas within the exterior portion of the building. An overgrown embankment is located along the south side of the main building. An employee parking area is located on the west side of the building and borders Ferry Street.

Utilities

The Site is serviced by the public utility water system. The building uses a septic system which consists of a buried septic storage tank located on the north side of the building and a pump chamber located south of the septic tank within the building footprint.

REMEDIATION AREAS

Based on the findings from investigation activities conducted at the Site as part of the, environmental impacts to soil and groundwater have been identified associated with the following AOCs:

Former Drywells

There have been drywells located on the property primarily associated with the painting and sanding area and the shop and storage area. One of the drywells, formerly located outside to the north of the 9 Ferry Street building, was reportedly removed and closed in 1990.

Based on site plans and results from surveys performed at the Site, there may be an additional former drywell located within the interior parking area of the 9 Ferry Street building. Remedial strategies will consist of the removal of the structures and any impacted material identified.

Former Leaching Field
A 1968 application for a permit to construct a sewage disposal system to consist of a 2,500-gallon septic tank and leach field beneath the southern section of the building was submitted for the Site.

Investigation activities have identified impacts to soil within the area of the 1968 leaching field. This leaching field was replaced with a new leaching field in the 1980s.

, Remedial actions at this AOC will consist of the excavation and removal of the impacted soil.

Former Drum and Waste Container Storage Area
A former drum storage area and former waste oil above ground storage tank was located within the northeast corner of the 9 Ferry Street building.

Soil impact has been identified from approximately 6 inches (below the gravel and fabric liner) to a depth of approximately 2-3 feet within the interior location.
Remedial strategies will consist of the removal of all impacted soil to the extent practical. As the building is currently support by pilings at this location, it is anticipated that access to the soils will be readily assessable.

COASTAL RESOURCES
As defined in CGS Section 22a-93(7)(I) the Site and surrounding area is considered a "developed shoreline". Attachment 1 highlights the surrounding development. The activity proposed on the property will have no negative impact on this coastal resource.

SCHEDULE
Since the remedial activities require access to the interior building, including boat parking areas, the remediation work is anticipated to occur in August 2021.

SITE PREPARATION
The following Site preparation activities will be conducted before the start of remedial construction activity.

Utility Clearance
Utility clearance will be obtained before the start of any intrusive remedial activity. Call-Before-You-Dig (CBYD) will be notified at least three full business days before the start of such activity and any available facility drawings will be reviewed.

Soil Handling
Due to limited space constraints, soil excavation will be accomplished using a hydraulic backhoe or excavator and the soil will be pre-characterized to allow for excavated soil to be live loaded into trucks for off-site disposal.

Soil Disposal
A licensed and properly permitted treatment and/or disposal facilities will be used for the disposal of contaminated material excavated from the site.

Groundwater Dewatering
The excavations are not anticipated to go more than a few feet below the elevation of groundwater. Therefore, removal of groundwater is not anticipated. If necessary, the bottoms of the excavation will be done in the wet and backfilled with a pervious uniform sized gravel to avoid settlement if groundwater is encountered.

Fugitive Dust Emission Control
Fugitive dust will be controlled to prevent the off-site migration of particulate matter, and to prevent exposure of persons to dust. It is anticipated that dust can be controlled by work practices and, if necessary, by adding a mist to the soil being removed.

Erosion and Sedimentation Control
Best management practices will be implemented relative to soil erosion and sedimentation control as indicated in the attached Plans.

Site Restoration
The Site will be graded and restored to original grades and conditions. All disturbed surfaces will be covered with non-erodible surfaces

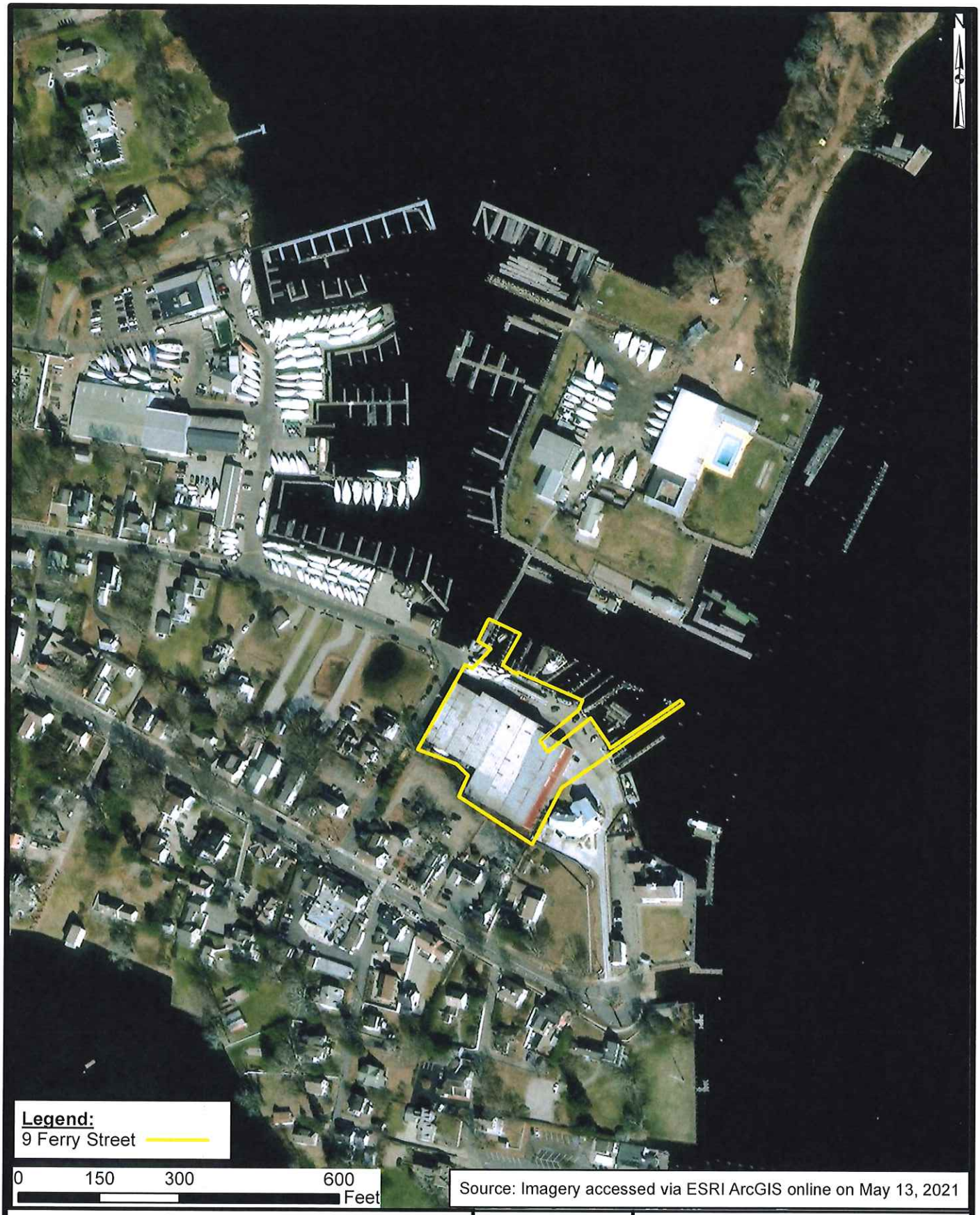
CLOSURE

Please contact Emily Perko at (860) 368-5300 if you have any questions.

Sincerely,

Emily Perko
Project Ecologist

Charles D. Brink, LEP
Senior Project Manager



Source: Imagery accessed via ESRI ArcGIS online on May 13, 2021

Essex Boat Works 9 Ferry Street Essex, CT	GEI Consultants	SITE LOCATION MAP
Coastal Site Plan Review	Project 2100855	May 2021 Fig. 1

Zoning Map

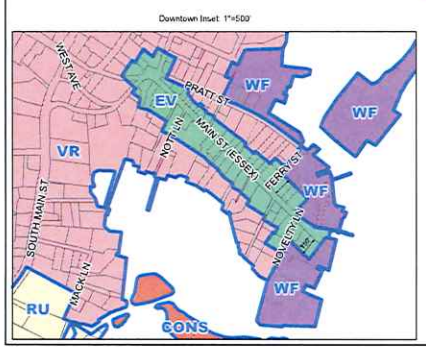
Town of Essex, Connecticut

May 11, 2017

Zone Code	Zone Description
AAC	Active Adult Community
BD	Business District
C	Commercial District
CONS	Conservation District
DMID	Design Municipal Industrial District
EV	Essex Village District
HG-1	Heritage Gateway
LI	Limited Industrial District
MI	Municipal and Industrial Service Zone
RLC	Residential Life Care District
RM	Rural Residence - Multi-Family District
RRR	River Road Residential
RU	Rural Residence District
VR	Village Residence District
WF	Waterfront Business District

Legend

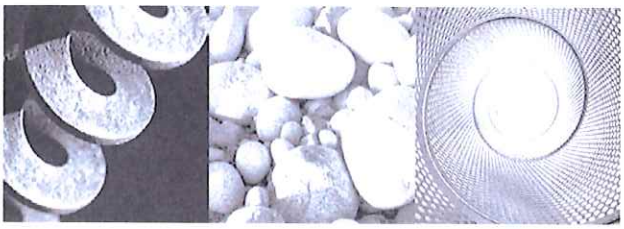
- RoadCenterlines
- Setbacks
- Gateway Conservation District
- Coastal Area Management
- Zone Boundaries
- Property Lines
- Water District
- Aquifer Protection



1,000 500 0 1,000 2,000 3,000 Feet

1 inch = 1,000 feet

AppGeo



GEI Consultants

Consulting
Engineers and
Scientists

Remedial Action Plan

9 Ferry Street & 63 Main Street
Essex, CT

Submitted to:
Richard Carlson
Essex Boat Works
9 Ferry Street
Essex, CT 06426

Submitted by:
GEI Consultants, Inc.
455 Winding Brook Drive
Glastonbury, CT 06033
860-368-5410

February 2020
Project 1905658

Charles D. Brink, LEP
Senior Project Manager

Barry Giroux, PE, LEP
Senior Project Manager

Table of Contents

Tables

Figures

DB/ah
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1. Introduction

GEI Consultants, Inc. (GEI) was retained by Essex Boat Works to prepare a Remedial Action Plan (RAP) for the properties located at 9 Ferry Street and 63 Main Street in Essex, Connecticut, herein referred to as "the Site". The location of the Site is provided in Figure 1.

1.1 Project Background

Both parcels were entered into the Property Transfer Program (PTP) in February 2016 under a Form III and associated Environmental Condition Assessment Form (ECAF). Receipt of the Connecticut Department of Energy and Environmental Protection (DEEP) Form Acknowledgement dated, March 29, 2016, delegated the Site to an LEP for investigation and remediation.

The 2016 ECAF identified the presence of six areas requiring further investigation, which were identified as Areas of Concern (AOCs). These AOCs included the following:

- Former Underground Storage Tanks (AOC #1)
- Former Drywells (AOC #2)
- Septic System and Leaching Field (AOC #3)
- Historical Fill (AOC #4)
- Former Coal Storage Area (AOC #5)
- Former Drum and Waste Container Storage Areas (AOC#6)

Extensive redevelopment at the Site began during the fall of 2017 and is currently ongoing. The redevelopment is generally being conducted in two phases. Phase I included the construction of a building within the central portion of the 63 Main Street parcel, and Phase II will consist of the redevelopment of the 9 Ferry Street parcel. In addition, the replacement of the Site's bulkheads is also anticipated to occur sometime in 2020.

1.2 Completion of Investigation Results

Based on the findings from the investigation activities conducted at the Site, environmental impacts to soil and/or groundwater have been identified associated with the following AOCs:

- Former Underground Storage Tanks (AOC #1)
- Former Drywells (AOC #2)
- Septic System and Leaching Field (AOC #3)

- Drum and Waste Container Storage Areas (AOC#6)

A site plan depicting the locations of the AOCs is provided in Figure 2. The following subsections provide a summary of the impacts identified at each of the AOCs:

1.2.1 AOC#1: Former Underground Storage Tanks

The former owner of the property indicated that all underground storage tanks (USTs) previously located at the Site had been removed. Ground penetrating radar conducted at the Site during the Phase II and Phase III investigations confirmed that USTs are no longer present at the Site, particularly those that were formerly located in the northwestern portion of the Site.

Although some soil removal was reportedly conducted during the removal of the USTs in 1996, some residual impacts remain at depth. Based on the analytical profile from soil samples collected within this AOC, the release appears to be derived from gasoline and possibly diesel fuels which would be consistent with fueling activities that would have been associated with the tanks.

1.2.2 AOC#2: Former Drywells

There have been several drywells located on the property primarily associated with the painting and sanding area and the shop and storage area. One of the drywells located to the north of the 9 Ferry Street building was reportedly removed and closed in 1990.

Based on site plans and results from GPR/EM surveys performed at the Site, there appears to be two additional former drywells located at the Site. Both former drywells are currently located within the interior parking area of the 9 Ferry Street Building. Impacts associated with this AOC are located at a depth of approximately 2-5 feet and are contained to the immediate vicinity of the drywell structure due to low permeable soil at depth and a stagnate groundwater flow within the building footprint due to lack of infiltration from the building.

1.2.3 AOC#3: Septic System and Leaching Field

A 1968 application for a permit to construct a sewage disposal system identifies the presence of a 2,500-gallon septic tank and leach field beneath the interior southern section of the 9 Ferry Street building.

Investigation activities conducted during both the Phase II and Phase III have identified impacts to soil within the area of the leaching field. A combination of high groundwater and non-permeable material at depth prohibits the leaching field from functioning properly.

Based on the findings of the Phase II and III investigations, impacts have been identified within the leaching field at a depth of 2-5 feet but appear to be primarily contained to the area identified within the Site plans that depict the location of the leaching field likely due to low permeable soil at depth and a stagnate groundwater flow within the building footprint due to lack of infiltration from the building.

1.2.4 AOC #6: Former Drum and Waste Container Storage Area

A former drum storage area was located along the eastern side of the 9 Ferry Street building and a waste oil AST was located within the northeast corner of the 9 Ferry Street Building.

Soil impact has been identified from approximately 6 inches (below the gravel and fabric liner) to a depth of approximately 2-3 feet at this location.

2. Site Description

2.1 Location and Legal Description

The Site consists of two separate abutting parcels known as 9 Ferry Street and 63 Main Street and are both located in Essex, Connecticut (Figs. 1 and 2). The Site is identified by the Town of Essex Assessor's Office as Map 47 Lot 17 (1.61 Acres) and Map 47 Lot 21-1 (0.69 acres) respectively. Both parcels are owed by Carlson Landing I LLC.

2.2 Site History

The previous Site owner, Mr. Ted Lahey, was interviewed in 2015 by ECS, Inc. of Agawam, Massachusetts during the preparation of a Phase I ESA report for the Site. Mr. Lahey indicated that the 9 Ferry Street parcel had been occupied by Essex Boat Works for more than 50 years. The original building on the property associated with the boat yard burned down in the 1960s. The historical layout included a large block of land and associated dock which was approximately 60 feet wide and extended approximately 70-80 feet into the Connecticut River. Gas pumps were located at the end of the block of land along the pier. This block of land was excavated and removed in the 1960s.

After the fire destroyed the previous buildings in the 1960s, the current 9 Ferry Street building was constructed in 1968.

The 63 Main Street parcel, which is now part of the Site, was acquired in April 2005 and previously consisted of a residential yard for an abutting residence.

Based on review of Sanborn Fire Insurance Company Maps, the Site has been used as a boat yard since at least the 1920s (First identified as Essex Boat Works in 1943) and was commercially developed prior to 1908.

2.3 Site Improvements

The 9 Ferry Street parcel is improved with a 35,780 square foot commercial building which covers much of the western portion of the property. The building is comprised of an interior building and an interior covered parking space. The building is steel frame construction, has first, second and third floor sections, and is finished with metal siding. Large overhead doors provide access to boat and vehicle parking within the interior covered parking space.

2.3.1 Interior Building

A painting bay and a wood shop are located on the north side of the interior building. On the ground floor in the north-central portion of the interior building is a sales counter and parts room containing various boat maintenance products, restrooms, a miscellaneous storage area for paint and other supplies, and an employee locker room. A boat painting bay and a woodworking shop is located within the southern section of the building. These areas have concrete floors, except the woodworking shop which has a wood plank floor. The remainder of the ground floor exterior covered space is used for boat and vehicle parking and has an earthen floor covered with crushed stone. The second floor of the north-central portion of the interior building consists of office space, a shop and miscellaneous storage. The third floor is unfinished storage space.

2.3.2 Docks

Boat docks extend from the northern side of the Site into the Connecticut River. A crane, travel lifts and forklifts are located on the northern and eastern portions of the Site.

2.3.3 Yard

The entire Site is unpaved and is covered with crushed stone, including the boat and vehicle parking areas within the exterior portion of the building. An overgrown embankment is located along the south side of the main building. An employee parking area is located on the west side of the building and borders Ferry Street.

2.3.4 New Construction

A new building has been constructed at the 63 Main Street parcel. The building consists of a 2-story, 4,500-square foot wood-frame building which contains a restaurant and bar on the first floor and offices on the second floor. Vehicle traffic to the 63 Main Street building is primarily from Main Street but can also be accessed from Ferry Street.

2.3.5 Utilities

The Site is serviced by the public utility water system. The 9 Ferry Street building uses a septic system which consists of a buried septic storage tank located on the north side of the building and a pump chamber located south of the septic tank within the building footprint. The 63 Main Street building utilizes a septic system located on the southern portion of the 63 Main Street parcel.

2.4 Surrounding Area Uses

The area in proximity to the Site consists of a mix of commercial and some residential properties. The Site is bound by the following:

- To the north: Connecticut River
- To the east: Connecticut River Museum
- To the south: Parking areas for commercial properties
- To the west: Ferry Street, across is commercial, residential, and undeveloped land

3. Environmental Setting

3.1 Surface Topography

The entire Site is unpaved and consists of a primarily trap rock. Elevation at the Site is approximately +3 to +5 feet above sea level. The southern section of the 63 Main street parcel rises to +10 to +15 feet along the access road to Main Street. A ten-foot-tall embankment is located along the southern property line of the 9 Ferry Street parcel.

3.2 Geologic Setting

The Site is located at the eastern end of the Essex Village peninsula, near the intersection of Main Street and Ferry Street. As part of our evaluation, GEI reviewed historical aerial photographs dating back to 1934. Some areas of the peninsula remain relatively unchanged. However, the northern, central and western portions of the Site have been extensively built out to the north and west. The apparent Connecticut River shoreline previously ran in a northwest direction, from a point just south of the Connecticut River Museum to near the northern extent of Ferry Street, approximately bisecting the Site.

Local geology maps indicate that the Essex Village peninsula, jutting out into the Connecticut River between Middle Cove and North Cove, is underlain by glacial outwash deposits of sand and gravel. However, investigation activities at the Site have encountered thick deposits of thinly-stratified silty sands to silts along the northern section of the property which is evident of historical filling.

Existing Fill – Fill is generally encountered within the northern portion of the Site to depths of about 2 to 5 feet. This material is primarily gravel and fine to coarse-grained sand, with varying amounts of silt, solid debris (brick), and remnants of old wooden piles. This further supports that the northern portion of the Site has been historically filled.

Alluvial/Organic Soils – Alluvial soils of varying consistency have been generally encountered below the fill in within the central sections of the Site. Historical maps indicate that these locations were very near the previous shoreline.

The uppermost portion (approx. 1 foot) of this layer consists of dark gray to black, soft organic silt. Underlying the silt is alluvial sand with frequent seams of fibrous peat, continuing for a thickness of about 5 feet. The peat lenses are on the order of ¼-inch to 1-inch in thickness and become less frequent with depth.

Native Sands – Medium to coarse brown sand has been encountered along the southern portion of the Site, especially with the 63 Main Street parcel where the sands are more pronounced since this area has been largely undisturbed.

3.2.1 Subsurface Materials

As identified, the subsurface conditions at the Site are generally comprised of three different zones, the northern zone (historical fill), the central zone (historical fill followed by alluvial/organic soils) and the southern zone (native sands, almost entirely located on the 63 Main Street parcel).

The northern zone consists of historical fill material from under the gravel surface to a depth of 5-7 feet. The central zone consists of about 2 feet of fill material followed by 3-5 feet of alluvial and organic soils. The southern zone consists primarily of course brown sand.

3.3 Hydrogeologic Setting

Based on surface topography, drainage features, tidal influences and the presence of the bulkhead, groundwater flow at the Site is to the northeast, but is relatively flat (0.015 feet/foot) due to the presence of the bulkhead, tidal fluctuations, and the fill material within the northern section of the Site. Regionally, groundwater flow is expected to be to the east toward the Connecticut River.

According to the DEEP water quality classification maps (October 2017), groundwater at the Site is classified as GA – may not meet current standards, which indicates that the groundwater is degraded due to either documented releases or from industrial activities. The goal is to prevent additional degradation and to restore to GA criteria.

The Site and surrounding properties are all serviced by municipal water; however, the Site and surrounding properties utilize septic systems for sewage disposal.

3.3.1 Site Flooding

The elevation of the Site is generally 3-5 feet above sea level. Due to the low elevation of the Site, the Site experiences flood events from the Connecticut River on a semi routine basis. Based on USGS Gauge 01194750, which is located approximately 200 feet southeast (down river) of the Site, the Connecticut River exceeded the 5-foot elevation on six separate occasions between January 1, 2018 and December 31, 2018 (3/3, 3/4, 3/6, 10/27, 11/16, and 11/27).

On March 2, 2018, GEI was on Site during a flooding event at which the water elevation at the Gauge was 4.76 feet. Although less than 5 feet, the entirety of the northern portion of the

Site was under 1-2 feet of standing water. Based on the Gauge, the Site experienced some level of flooding (Gauge reading >4) at least 26 times in 2018.

3.4 Site Drainage

The majority of the Site is flat and covered with gravel. Storm water generated on the roof of the main building runs off the roof to the property below. Much of the storm water at the Site evaporates, slowly infiltrates or runs as sheet flow to the Connecticut River.

There is one storm water outfall at the Site. Storm water within the northwestern portion of the Site flows in a northwesterly direction towards a catch basin at the entrance of the Site along Ferry Street. The catch basin discharges to the Connecticut River to the north of the Site.

The Site is routinely flooded by the Connecticut River during storm events. Flooding events will result in standing water up to elevation +4 resulting in several feet of standing water along the northern portion of the Site. During major storm events, flooding will result in water reaching over elevation +5.

A curtain drain is located in the southwest corner of the building. Drainage from upland properties south and west of the Site enters this drain and is ultimately discharged to the Connecticut River via an outfall through the bulkhead east of the Ferry Street building.

According to the former property owner, approximately 18 inches of the ground surface has been stripped, a fabric layer was added, followed by compacted stone dust and trap rock on the entire exterior. This was reportedly done to prevent muddy surfaces, since the entire Site is unpaved and is frequently flooded.

4. Remediation Goals

This section provides general remedial action objectives for soil and groundwater and a summary of the AOCs requiring remedial actions.

4.1 Soil

Applicable soil cleanup standards include the industrial/commercial direct exposure criteria (I/C DEC) and GA groundwater classification area pollutant mobility criteria (GA PMC).

4.1.1 Direct Exposure Criteria (DEC)

The I/C DEC is applicable because the Site will be used for commercial purposes and an environmental land use restriction (ELUR) will be established preventing residential use of the Site. Soil cleanup to achieve compliance with the DEC will extend to a depth of 4 feet below the ground surface in areas that are rendered inaccessible. The DEC do not apply to soil that is inaccessible provided an ELUR is established to prevent disturbance of the deeper impacted soil. An ELUR may be established to render impacted soil in select areas inaccessible and/or environmentally isolated.

"Inaccessible soil" is defined in the RSR as follows:

(A) more than four feet below the ground surface;

(B) more than two feet below a paved surface comprised of a minimum of three inches of bituminous concrete or concrete, which two feet may include the depth of any material used as sub-base for the pavement;

(C) polluted fill beneath a bituminous concrete or concrete surface comprised of a minimum of three inches of bituminous concrete or concrete if such fill is:

i. polluted in excess of applicable direct exposure criteria only by semi-volatile substances or petroleum hydrocarbons that are normal constituents of bituminous concrete,

ii. polluted by metals in concentrations not in excess of two times the applicable direct exposure criteria, or

iii.any combination of the substances or limits identified in clause (i) or (ii) of this subparagraph; or

(D)(i) beneath an existing building, or (ii) beneath another existing permanent structure provided that written notice that such structure will be used to prevent human contact.

4.1.2 Pollutant Mobility Criteria

The PMC that are utilized for remediation determination depends on the groundwater classification of the Site. The Site is located within a GA, does not meet current standards, groundwater classified area.

The PMC generally apply to all soil in the unsaturated zone, from the ground surface to the seasonal low water table in GA classified areas. The criteria do not apply to environmentally isolated soils that are polluted with substances other than volatile organic compounds (VOCs) provided that an ELUR is recorded for the release area which ensures that such soils will not be exposed to infiltration (unless approved in writing by the DEEP Commissioner).

Environmentally isolated soils are defined as:

> (A)(i) beneath an existing building or (ii) beneath another existing and permanent structure which the Commissioner has determined in writing would prevent the migration of pollutants;
>
> (B) not a continuing source of pollution;
>
> (C) not polluted with volatile organic substances or, if it is polluted with such substances, the concentration of such substances has been reduced in concentration to the maximum extent prudent; and
>
> (D) above the seasonal high water table.

An ELUR must be recorded for the Site, which ensures that such environmentally isolated soils will not be exposed to infiltration as a result of building demolition or other activities. Buildings can be constructed over contaminated soils rendering them environmentally isolated.

The Site routinely floods from overflow from the Connecticut River onto the property. As such, seasonal high water table at the property is at grade for the entire northern portion of the Site, which encompasses most of the identified release areas, where seasonal low water table has been identified as being approximately 3 feet below grade (elevation 0/sea level) within the northern portion of the Site.

As the Site is not paved, several of the release areas are subject to infiltration for a minimum of five years, and are not obstructed by anthropogenic features. In addition, the release areas within the covered portion of the building do not receive rainfall rendering these soils environmentally isolated and with the application of an ELUR.

4.1.3 Polluted Fill

The Site has historically developed since the early 1900s and has operated as Essex Boat Works since the early 1940s. The Site has undergone several iterations of filling over time. This has been confirmed through the advancement of test pits, soil borings and geotechnical work associated with the redevelopment of the Site. The fill material generally extends from the bulkhead to approximately 30-50 feet to the south (the northern zone) where native sand is encountered. The fill material extends from approximately elevation 4 to elevation 0 at which organic alluvium (primarily organic silts containing organic fibers) is encountered. The fill material consists primarily of fine to coarse-grained (widely graded) sand, with varying amounts of silt, debris, and remnants of old wooden piles.

Based on the Site history, the fill material was likely placed between the late 1800s to the 1960s, which is prior to the construction of the current Site features which occurred in 1968.

The fill material, through laboratory testing, has been identified to contain concentrations of extractable petroleum hydrocarbons (ETPH), polycyclic aromatic hydrocarbons (PAHs), total lead and Synthetic Precipitation Leaching Procedure (SPLP) lead. The location of the fill material is generally located within the northern area of the property and are areas that are subject to flooding and/or subject to infiltration of precipitation.

4.1.4 Site Compliance with Soil Criteria

Numeric soil cleanup criteria are not met in the areas described below and remediation consisting of excavation and off-Site disposal along with establishment of ELURs and exemptions will be utilized to achieve compliance with the cleanup criteria. Table 1 provides a summary of the laboratory analytical testing conducted as part of the Phase II and Phase II investigations.

- Former Underground Storage Tanks (AOC #1) – PAHs are present in soil at concentrations exceeding the DEC. As releases from this AOC would be at depth, as indicated by the presence of SPLP lead and ETPH and are below the seasonal low watertable PMC would not apply.
- Former Drywells (AOC #2) – ETPH is present in soil at concentrations below applicable standards. Although below standards, these areas potentially represent a possible source area and as such the drywell structures and any identified impacted soil will be removed.
- Former Septic System and Leaching Field (AOC #3) – ETPH, lead, mercury, and PAHs have been identified at concentration exceeding PMC and DEC. In addition, there was an indication of the potential presence of light nonaqueous

phase liquid (LNAPL) within the soil. The release area for this AOC would be at and slightly above the groundwater interface (through the leaching field).

- Historical Fill (AOC #4) – Historical fill is generally encountered within the northern portion of the Site to depths of about 2 to 5 feet. Although lead has been identified within the fill material, due to its wide spread nature and the historical placement of the fill material, it will be characterized as a widespread polluted fill as other parcels within proximity to the river would have historically been filled similar to that of Site as the area was developed. In addition, the areas containing the fill material are subject to infiltration from both rainfall and flooding.
- Former Drum and Waste Containers Storage Areas (AOC#6) - Arsenic, lead, mercury, VOCs, ETPH and PAHs have been identified at concentrations exceeding the default RSR criteria at this AOC. In addition, there was an indication of the potential presence of light nonaqueous phase liquid (LNAPL) within the soil. This release area is generally from grade to seasonal low groundwater (3 feet).

4.2 Groundwater

Groundwater remediation requirements are dependent upon the groundwater classification of the Site. The objectives of these standards are as follows:

- Protect existing use of groundwater regardless of the area's groundwater classification;
- Prevent further degradation of groundwater quality;
- Prevent degradation of surface water from discharges of contaminated groundwater; and
- Protect human health and the environment.

Portions of the RSRs governing groundwater regulate the remediation of groundwater based on each substance present within the plume and by each distinct plume of contamination. Several factors influence the remediation goal at a given site including: background water quality, the groundwater classification, the proximity of nearby surface water, existing groundwater uses, the presence of buildings and their usage, and the presence of non-aqueous phase liquid (NAPL). When assessing general groundwater remediation requirements, all of these factors must be considered in conjunction with the major numeric components of the Remediation Standard Regulations (RSRs).

In general, remediation of a groundwater plume in a GA groundwater classified area shall result in the attainment of the following:

- Background; or

- GWPC;
- SWPC; and
- Volatilization Criteria (VC)

4.2.1 Background

The Site routinely floods from overflow from the Connecticut River onto the property. As such, seasonal high water table at the property is at grade for the entire northern portion of the Site, where seasonal low water table has been identified as being 2-3 feet below grade for the release areas at the Site.

As the Site is not paved, the releases from AOC #1 and AOC#6 are subject to infiltration, for a minimum of five years, and are not obstructed by anthropogenic features.

As public sewer is not available to the Site or surrounding properties, all properties within the immediate area contain septic disposal systems. The properties located to the south of the Site contain septic systems that are in proximity to the Site's southern property boundary which in turn allows septic effluent to discharge to the property. In addition, although the Site is identified with a GA groundwater classification, according to Section 19-13-B51d of Regulations of Connecticut State Agencies, drinking water wells with a required withdrawal rate of under ten gallons per minute cannot be placed within seventy-five feet of a system for disposal of sewage or other source of pollution and also cannot be placed within twenty-five feet of the high water mark of any surface water body, nor within twenty-five feet of a drain carrying surface water or of a foundation drain.

The Site and surrounding area, particularly the properties upgradient to the south (51 and 53 Main Street) are all on septic systems that drain to the Site. Also, as provided, due to the flooding of the Site, the high-water mark covers a majority of the Site, making the Site unusable as a potential source area for drinking water. GEI will look to either petition to change the groundwater classification to GB, due to the reasoning provided, or establish a background condition for the site and utilize those values for criterion for determination of compliance with the RSRs.

4.2.2 Surface Water Protection Criteria

In general, contaminants of concern (COCs) within a groundwater plume which discharges to a surface water body shall be equal to or less than the default the surface-water protection criterion or an alternative surface-water protection criterion.

An alternative surface-water protection criterion may be calculated for a substance in Appendix D of the most recent Water Quality Standards by multiplying either the human

health or aquatic life criterion for such substance, whichever is lower, by the average daily discharge of polluted groundwater (Q plume) originating from the subject groundwater plume.

Since groundwater at the Site discharges directly to the Connecticut River, a site-specific value will be derived for each constituent identified within the groundwater plume(s) at the Site.

4.2.3 Volatilization Criteria

Groundwater polluted with a volatile organic substance within 15 feet of the ground surface or a building shall be remediated such that the concentration of each COC is equal to or less than the applicable residential volatilization criterion for groundwater.

An exemption from volatilization criteria provides that the volatilization criteria do not apply to groundwater polluted with volatile organic substances, where the water table is less than fifteen feet below the ground surface, if no building exists over the groundwater polluted with volatile organic substances at a concentration above the applicable volatilization criteria, and the placement of an ELUR is in place.

Groundwater results collected from the Site have demonstrated to be impacted with ETPH, PAHs and metals.

4.2.4 Site Compliance with Groundwater Criteria

A summary of groundwater sample results collected during the Phase II and Phase III investigations are provided in Table 2. Only low concentrations of petroleum-related VOCs have been detected in groundwater. Therefore, there are no compliance issues regarding the volatilization criteria. Lead and ETPH have been detected at concentrations above the groundwater protection criteria (GWPC). Metals (arsenic, copper, lead, mercury, zinc) and PAHs (2-methyl naphthalene and phenanthrene) have been detected in groundwater at concentrations above the default SWPC.

Further groundwater monitoring, including four quarterly rounds of sampling, will be conducted after remediation has been completed to demonstrate compliance with the applicable RSR criteria. Further monitoring may indicate compliance with RSR criteria or alternative compliance measures allowed under the RSRs. These alternative measures include development of a site-specific SWPC, the use of results from wells downgradient and nearer the point of discharge to surface water to evaluate compliance with the default SWPC, and the potential to change the groundwater classification from GA to GB for the Site.

5. Proposed Remedial Actions

5.1 Introduction

Redevelopment at the Site is currently being conducted in two phases. Phase I included the construction of a building within the central portion of the 63 Main Street parcel, and Phase II will consist of the redevelopment of the 9 Ferry Street parcel.

The proposed remedial actions will be coordinated with site development activities and will consist of excavation and off-site disposal of impacted soil rendering soil inaccessible and environmentally isolated. Details regarding the remediation will be developed as the redevelopment plans are completed.

5.2 Remedial Actions to be conducted as part of this RAP

Based on the findings from the investigation activities conducted at the Site, environmental impacts to soil and groundwater have been identified associated with the following AOCs:

- Former Underground Storage Tanks (AOC #1)
- Former Drywells (AOC #2)
- Septic System and Leaching Field (AOC #3)
- Drum and Waste Container Storage Areas (AOC#6)

The following section provides a summary of each of the AOCs requiring remedial actions and the proposed actions to be conducted:

5.2.1 AOC#1: Former Underground Storage Tanks

The former property owner indicated that all USTs at the Site had been removed. Ground penetrating radar conducted at the Site confirm that USTs are no longer present.

Although some soil removal was reportedly conducted, residual impacts remain at depth (>5 feet) within this AOC. As this location is subject to flooding and is also located within the area where the bulkhead anchor/deadman tiebacks are located, excavation and removal of the residual impacts would be limited and mostly prohibited.

As the residual impacts associated with this AOC are beneath the seasonal low groundwater and more than 4 feet below the surface, an ELUR to will be placed at this location to render the residual soils inaccessible and as the soil is beneath the season low groundwater table it is not subject to the PMC.

5.2.2 AOC#2: Former Drywells

There have been several drywells located on the property primarily associated with the painting and sanding area and the shop and storage area. One of the drywells, formerly located outside to the north of the 9 Ferry Street building, was reportedly removed and closed in 1990.

Based on site plans and results from GPR/EM surveys performed at the Site, there appears to be two additional former drywells located at the Site. Both are currently located within the interior parking area of the 9 Ferry Street building. Impacts associated with this AOCs would be at a depth of approximately 2-5 feet and likely will be contained to the immediate vicinity of the drywell structure due to low permeable soil at depth (alluvial/organic soils) and a stagnate groundwater flow within the building footprint due to lack of precipitation infiltration inside the building.

Remedial strategies for this AOC will consist of the removal of the structures and any impacted material identified.

5.2.3 AOC#3: Septic System and Leaching Field

A 1968 application for a permit to construct a sewage disposal system to consist of a 2,500-gallon septic tank and leach field beneath the southern section of the building was submitted for the Site.

Investigation activities conducted during both the Phase II and Phase III have identified impacts to soil within the area of the leaching field. A combination of high groundwater and low permeable material at depth prohibits the leaching field from functioning adequately and it appears that the system may have failed, although this has not been confirmed.

Based on the findings of the Phase II and Phase III investigation activities, impacts have been identified within the leaching field, but appear to be primarily contained to the area identified as the leaching field.

The owner of the property is still evaluating whether the system is currently functional. As such, remedial actions will consist of either excavation and removal of the system and impacted soil (if determined to have failed) or conducting some limited removal actions (leaving the existing system in place) and injection of oxidants/ORC/HRC for removal of residual impacts.

5.2.4 AOC #6: Former Drum and Waste Container Storage Area

A former drum storage area was located along the eastern side of the 9 Ferry Street building and a waste oil AST was located within the northeast corner of the 9 Ferry Street building.

Soil impact has been identified from approximately 6 inches (below the gravel and fabric liner) to a depth of approximately 2-3 feet within both the interior and exterior locations.

Remedial strategies for this AOC will consist of the removal of all impacted soil to the extent practical. As the building is currently support by pilings at this location, it is anticipated that access to the soils will be readily assessible.

6. Remediation Implementation

This section discusses the general framework for implementation of this remedial action.

6.1 Notification

By applicable public notice protocol as required by statute, the local health department, and the general public were notified regarding the proposed remedial activities in conjunction with the construction of the 63 Main Street building. As specified in Property Transfer Program statutes, public notice included the following: a public notice was published on June 7th, 2018 in a local newspaper (Hartford Courant, Essex area zone); written notification was provided to the local director of health on June 4th, 2018; and the installation of a 4-foot by 6-foot sign on the subject property on July 13th, 2018.

6.2 Schedule

Since the remedial activities will be conducted as part of the redevelopment of the Site, the schedule for when the remedial actions will be conducted have not been determined. However, since the Site is used for winter storage of boats, it is anticipated that the remedial actions will occur during the summer/fall of 2020, 2021 and/or 2022 during the boating season.

6.3 Site Preparation Activities

The following Site preparation activities will be conducted before the start of remedial construction activity.

6.3.1 Utility Clearance

Utility clearance will be obtained before the start of any intrusive remedial activity. Call-Before-You-Dig (CBYD) will be notified at least three full business days before the start of such activity and any available facility drawings will be reviewed.

6.4 Soil Handling

Due to limited space constraints, soil excavation will be accomplished using a hydraulic backhoe or excavator and the soil will be pre-characterized to allow for excavated soil to be live loaded into trucks for off-site disposal.

6.5 Soil Disposal

Only a licensed and properly permitted treatment and/or disposal facilities will be used for the disposal of any contaminated soil. The soil will be brought to either a landfill located in Connecticut, a permitted low temperature thermal desorption facility, or to a permitted landfill or recycling facility located outside of Connecticut.

6.6 Groundwater Dewatering

The excavations are not anticipated to go more than a few feet below the elevation of groundwater. Therefore, removal of groundwater will not be necessary. If necessary, the bottoms of the excavation will be done in the wet and backfilled with a pervious uniform sized gravel to avoid settlement if groundwater is encountered.

6.7 Fugitive Dust Emission Control

Fugitive dust will be controlled to prevent the off-site migration of particulate matter, and to prevent exposure of persons to dust. It is anticipated that dust can be controlled by work practices and, if necessary, by adding a mist to the soil being removed.

6.8 Erosion and Sedimentation Control

Best management practices will be implemented relative to soil erosion and sedimentation control as indicated in the approved soil erosion and sediment control plan for the redevelopment of the property. Since the Site routinely floods and maintains a steady flow of vehicle traffic, excavation areas will be backfilled quickly upon completion of excavation and all excavated soils will be live loaded for immediate removal from the Site.

6.9 Site Restoration

The Site will be graded and restored to original grades and conditions. All disturbed surfaces will be covered with non-erodible surfaces.

6.10 Record Keeping and Documentation

The following records will be maintained to document remedial activity and progress:

- Log of daily activity including documentation of personnel, equipment, and material on and off site, as well as material quantities imported, used, or removed
- Copies of waste manifests and certificates of disposal
- Photograph log of remediation progress

- Identification, description, and results of analytical sampling including collection methods, location IDs, type, depths, time, and concentration results
- Delineation of the final vertical and horizontal limits of remediated areas

6.11 Post Soil Remediation Activities

6.11.1 Compliance Groundwater Monitoring Program

After soil remedial activities have been completed for the entire Site, groundwater will be monitored quarterly for a minimum of one year to demonstrate compliance with the RSRs. The groundwater monitoring plan to be developed will specify groundwater monitoring wells to be sampled, field collection and analytical methods, quality assurance/quality control (QA/QC) procedures, program duration, and reporting requirements.

The groundwater monitoring plan will indicate the wells to be sampled and require that the groundwater samples from each well will be analyzed for one or more of the following:

- ETPH by the Connecticut Extractable TPH Method
- PAHs by EPA Method 8270
- Metals by EPA Method 6010
- VOCs by EPA Method 8260

All analysis will be performed in accordance with CT DEEP reasonable confidence protocols by a laboratory certified by the Connecticut Department of Public Health.

6.11.2 Remedial Action Report

GEI will prepare a remedial action report to document environmental remediation work once completed. The reports will include the following items:

- A summary of remediation activities
- A summary of soil reuse activities (if applicable)
- Photographic log
- A description of and justification for any deviations from this RAP
- Soil shipping documentation for any soils sent off site
- Analytical results
- Conclusions regarding compliance with the RSR cleanup criteria

6.11.3 Establishment of Environmental Land Use Restrictions

An ELUR is a grant of easement that is granted to the Commissioner of the CT DEEP by the property owner and is recorded on the municipal land records. The purpose of an ELUR is to minimize the risk of human exposure to potential hazards in the environment by preventing specific uses or activities at a property or a portion of a property. An ELUR is a tool that permits the remedial goals for a property to be linked to the exposure risk associated with its expected use.

The ELUR, if required, for the remediation proposed will restrict residential use of the entire Site, and disturbance of contaminated soil, which has been rendered inaccessible or environmentally isolated. The ELUR will also prevent disturbance of clean soil, pavement or buildings, which are used to render soil inaccessible or environmentally isolated.

An ELUR application submission to CT DEEP includes the following components.

- A draft ELUR Declaration
- A draft Property Description
- A proposed Decision Document prepared using the template in this plan
- A draft Class A-2 survey of the parcel or portion, thereof, which is the subject of the proposed ELUR
- A certified copy of the notice required by Section 22a-133q-1(c), as such notice appeared in the newspaper or newspapers
- A property owner's affidavit which is used to identify unrecorded interests
- Draft subordination agreements
- A summary of all the interests in the land and a request for subordination waivers, if needed

After CT DEEP approves the ELUR, it is signed and recorded on the land records.

Tables

Table 1. Summary of Soil Analytical Results – Phase II and Phase III Investigations
Remedial Action Plan
9 Ferry Street 63 Main Street
Essex, CT

					AOC Investigated	AOC-1									AOC-2		
					Sample Name	SB-1	SB-2	SB-3	SB-4	B-3	B-4	B-5	B-6	TB-1	SB-7	SB-8	SB-8
					Sampled Interval (ft)	5-7	5-7	7-9	5-7	6-8	2-4	0-2	0-2	6-7	5-7	3-5	7-9
					Date Sampled	9/11/2015	9/11/2015	9/11/2015	9/11/2015	4/24/2017	4/24/2017	4/24/2017	4/24/2017	10/4/2018	9/11/2015	9/11/2015	9/11/2015
Analyte	**Units**	**Method**	**I/C DEC**	**GA PMC**													
Metals, total	mg/Kg																
Arsenic			10	-	3.3	6.4	1.6	6	5.32	1.44	2.3	1.94	1.63	2	3.8	< 1.1	
Barium			140,000	-	98.4	57.2	1,180	50.9	33	48.9	57.5	50.4	-	56.3	88.8	22.8	
Beryllium			2	-	< 0.27	< 0.35	< 0.31	< 0.36	< 0.39	< 0.31	< 0.28	< 0.30	-	< 0.28	< 0.28	< 0.42	
Cadmium			1,000	-	< 0.34	< 0.43	< 0.39	< 0.45	< 0.48	< 0.38	< 0.35	< 0.37	-	< 0.35	0.45	< 0.53	
Chromium			100	-	6.87	14	21	16	16.5	10.5	10.9	9.19	-	11.4	15.2	11.4	
Copper			76,000	-	28	73	424	54	115	165	146	141	-	14.3	32.6	16	
Lead			1,000	-	193	239	69.1	409	298	41.8	271	225	146	19.4	129	4.36	
Mercury			610	-	0.17	5.18	< 0.03	0.54	0.17	0.29	1.27	0.93	-	0.05	1.17	< 0.05	
Nickel			7,500	-	4.55	6.12	11.4	11.1	21.5	8.84	10.1	9.86	-	8.57	11.6	8.17	
Vanadium			14,000	-	8.31	10.8	15.2	14.7	13	24.1	32.4	48.3	-	28.1	18.9	18.5	
Zinc			610,000	-	47.6	83.5	41.8	157	78.8	75.6	111	125	-	94.5	381	16.7	
Metals, SPLP	mg/L																
SPLP Arsenic			-	0.05	0.01	0.007	-	0.012	-	-	-	-	-	< 0.004	0.006	-	
SPLP Barium			-	1	0.063	0.021	-	0.021	-	-	-	-	-	0.02	0.042	-	
SPLP Chromium			-	0.5	< 0.010	< 0.010	-	< 0.010	-	-	-	-	-	< 0.010	< 0.010	-	
SPLP Copper			-	1.3	0.023	0.01	-	< 0.010	-	-	-	-	-	< 0.010	< 0.010	-	
SPLP Lead			-	0.015	**0.227**	**0.034**	-	**0.025**	-	-	-	-	-	< 0.010	0.011	-	
SPLP Mercury			-	0.002	< 0.0005	< 0.0005	-	< 0.0005	-	-	-	-	-	< 0.0005	< 0.0005	-	
SPLP Nickel			-	1	< 0.010	< 0.010	-	< 0.010	-	-	-	-	-	< 0.010	< 0.010	-	
SPLP Vanadium			-	0.05	< 0.010	< 0.010	-	< 0.010	-	-	-	-	-	< 0.010	< 0.010	-	
SPLP Zinc			-	5	0.053	0.02	-	0.013	-	-	-	-	-	0.012	0.015	-	
Extractable Total Petroleum Hydrocarbons (ETPH)	mg/Kg	CT ETPH															
ETPH			2,500	500	< 56	< 65	< 61	90	730	100	310	72	< 61	<55	810	<86	
Volatile Organic Compounds (VOCs)	ug/Kg	EPA 8260C															
1,2,4-Trimethylbenzene			1,000,000*	2,800*	< 340	< 8.1	58	< 6.9	<5.6	<6.4	<4.4	<4.2	< 6.4	< 5.2	4,100	< 570	
1,3,5-Trimethylbenzene			1,000,000*	2,800*	< 340	< 8.1	24	< 6.9	<5.6	<6.4	<4.4	<4.2	< 6.4	< 5.2	1,800	< 570	
2-Isopropyltoluene			NE	NE	< 340	< 8.1	< 4.8	< 6.9	<5.6	<6.4	<4.4	<4.2	< 6.4	< 5.2	< 330	< 570	
Benzene			200,000	20	< 5.6	< 8.1	6.2	< 6.9	<5.6	<6.4	<4.4	<4.2	< 6.4	< 5.2	< 330	< 9.7	
Ethylbenzene			1,000,000	10,100	< 5.6	< 8.1	19	< 6.9	<5.6	<6.4	<4.4	<4.2	< 6.4	< 5.2	< 330	< 9.7	
Naphthalene			2,500,000	5,600	< 340	< 8.1	42	< 6.9	<5.6	<6.4	4.6	<4.2	< 6.4	< 5.2	< 330	< 570	
n-Butylbenzene			1,000,000*	7,000*	< 340	< 8.1	14	< 6.9	<5.6	<6.4	<4.4	<4.2	< 6.4	< 5.2	480	< 570	
n-Propylbenzene			1,000,000*	1,000*	< 340	< 8.1	13	< 6.9	<5.6	<6.4	<4.4	<4.2	< 6.4	< 5.2	< 330	< 570	
sec-Butylbenzene			1,000,000*	7,000*	< 340	< 8.1	4.9	< 6.9	<5.6	<6.4	<4.4	<4.2	< 6.4	< 5.2	430	< 570	
Toluene			1,000,000	20,000	< 5.6	< 8.1	5	< 6.9	<5.6	<6.4	<4.4	<4.2	< 6.4	< 5.2	< 330	< 9.7	
Total Xylenes			1,000,000	19,500	< 5.6	< 8.1	93	< 6.9	<5.6	<6.4	<4.4	<4.2	< 6.4	< 5.2	< 330	< 9.7	
Polycyclic Aromatic Hydrocarbons (PAHs)	ug/Kg	EPA 8270D															
2-Methylnaphthalene			1,000,000*	560*	< 260	< 300	< 290	< 320	< 310	< 250	300	< 250	< 290	< 260	< 260	< 400	
Acenaphthene			2,500,000*	8,400*	< 260	< 300	< 290	< 320	< 310	< 250	1,700	< 250	< 290	< 260	< 260	< 400	
Benz(a)anthracene			1,000	1,000	360	< 300	< 290	**1,900**	< 310	< 250	1,000	< 250	340	< 260	< 260	< 400	
Benzo(a)pyrene			1,000	1,000	480	< 300	< 290	**1,700**	< 310	< 250	480	< 250	310	< 260	< 260	< 400	
Benzo(b)fluoranthene			1,000	7,800	300	< 300	< 290	**1,300**	< 310	< 250	580	< 250	< 290	< 260	< 260	< 400	
Benzo(k)fluoranthene			8,400	78,000	320	< 300	< 290	1,500	< 310	< 250	560	< 250	< 290	< 260	< 260	< 400	
Chrysene			780,000*	1,000*	390	< 300	< 290	2000	< 310	< 250	1200	< 250	340	< 260	< 260	< 400	
Fluoranthene			1,000,000	2,500,000	650	410	< 290	3,400	350	320	4,400	570	780	< 260	330	< 400	
Fluorene			1,000,000	2,500,000	< 260	< 300	< 290	< 320	< 310	< 250	2,300	< 250	< 290	< 260	< 260	< 400	
Indeno(1,2,3-cd)pyrene			7,800*	1,000*	940	390	< 290	810	< 310	< 250	< 250	< 250	< 290	< 260	< 260	< 400	
Naphthalene			2,500,000	5,600	< 260	< 300	< 290	< 320	< 310	< 250	530	< 250	< 290	< 260	< 260	< 400	
Phenanthrene			1,000,000	2,500,000	720	< 300	< 290	2,000	360	510	6,800	480	610	490	< 260	< 400	
Pyrene			1,000,000	2,500,000	570	370	< 290	3,200	< 310	< 250	3,400	490	650	< 260	< 260	< 400	

Abbreviations:
mg/kg = milligrams per kilograms or parts per million (ppm)
ug/kg = micrograms per kilogram or parts per billion (ppb)
CAS No. = Chemical Abstracts Service Number
NA = Not Analyzed
NE = Not Established
GA PMC = GA Pollutant Mobility Criteria
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Shading and bolding indicates that the detected concentration is above one or more regulatory criteria
* indicates the value is part of the Additional Polluting Substances (APS) 2015 Criteria

Table 1. Summary of Soil Analytical Results – Phase II and Phase III Investigations
Remedial Action Plan
9 Ferry Street 63 Main Street
Essex, CT

				AOC Investigated	AOC-3							AOC-4		AOC-5
				Sample Name	SB-9	SB-10	SB-11	SB-12	TB-9	TB-11	TB-13	CS-1	TB-3	TB-2
				Sampled Interval (ft)	3-4	3-5	3-5	3-5	5-6	5-6	2-2.5	2-3	2-3	8.5-9.5
				Date Sampled	9/11/2015	9/11/2015	9/11/2015	9/11/2015	10/4/2018	10/4/2018	10/4/2018	12/15/2017	10/4/2018	10/4/2018
Analyte	**Units**	**Method**	**I/C DEC**	**GA PMC**										
Metals, total	mg/Kg													
Arsenic			10	-	1	1.4	4.2	2.5	1.41	< 0.82	< 0.84	2.9	1.91	1.72
Barium			140,000	-	28.7	20.3	61.9	60.6	-	-	-	40.7	-	-
Beryllium			2	-	< 0.32	< 0.30	< 0.29	0.34	-	-	-	-	-	-
Cadmium			1,000	-	< 0.41	< 0.38	< 0.37	< 0.37	-	-	-	0.98	-	-
Chromium			100	-	7.71	5.54	10.2	10.8	-	-	-	28.8	-	-
Copper			76,000	-	13.3	11.7	92.1	12.6	-	-	-	-	-	-
Lead			1,000	-	2.87	4.29	185	16.6	64.8	8.18	6.46	32.5	44.8	57.9
Mercury			610	-	< 0.03	0.05	5.59	< 0.03	-	-	-	0.15	-	-
Nickel			7,500	-	5.49	5.27	8.11	7.62	-	-	-	-	-	-
Vanadium			14,000	-	23.1	11.7	14.6	20.6	-	-	-	-	-	-
Zinc			610,000	-	18.8	40.3	119	201	-	-	-	-	-	-
Metals, SPLP	mg/L													
SPLP Arsenic			-	0.05	< 0.004	0.01	0.013	-	-	-	-	0.006	-	-
SPLP Barium			-	1	< 0.010	0.019	0.048	-	-	-	-	0.019	-	-
SPLP Chromium			-	0.5	< 0.010	< 0.010	< 0.010	-	-	-	-	<0.01	-	-
SPLP Copper			-	1.3	< 0.010	0.019	0.147	-	-	-	-	-	-	-
SPLP Lead			-	0.015	< 0.010	< 0.010	**0.142**	-	-	-	-	**0.029**	-	-
SPLP Mercury			-	0.002	< 0.0005	< 0.0005	**0.0063**	-	-	-	-	<0.0005	-	-
SPLP Nickel			-	1	< 0.010	< 0.010	< 0.010	-	-	-	-	-	-	-
SPLP Vanadium			-	0.05	< 0.010	0.017	0.014	-	-	-	-	-	-	-
SPLP Zinc			-	5	< 0.010	0.024	0.125	-	-	-	-	-	-	-
Extractable Total Petroleum Hydrocarbons (ETPH)	mg/Kg	CT ETPH												
ETPH			2,500	500	120	310	**510**	<59	< 59	490	**1,700**	<59	-	< 58
Volatile Organic Compounds (VOCs)	ug/Kg	EPA 8260C												
1,2,4-Trimethylbenzene			1,000,000*	2,800*	< 4.5	11	< 420	< 5.3	< 500	< 5.0	< 510	<5.5	-	< 470
1,3,5-Trimethylbenzene			1,000,000*	2,800*	< 4.5	6.6	< 420	< 5.3	< 500	< 5.0	< 510	<5.5	-	< 470
2-Isopropyltoluene			NE	NE	< 4.5	< 4.0	< 420	< 5.3	< 500	< 5.0	230	<5.5	-	< 470
Benzene			200,000	20	< 4.5	< 4.0	< 420	< 5.3	< 39	< 5.0	< 38	<5.5	-	< 7.6
Ethylbenzene			1,000,000	10,100	< 4.5	< 4.0	< 420	< 5.3	2,200	< 5.0	< 510	<5.5	-	< 7.6
Naphthalene			2,500,000	5,600	< 4.5	< 4.0	4900	< 5.3	< 500	< 5.0	280	<5.5	-	< 470
n-Butylbenzene			1,000,000*	7,000*	< 4.5	< 4.0	< 420	< 5.3	< 500	< 5.0	500	<5.5	-	< 470
n-Propylbenzene			1,000,000*	1,000*	< 4.5	< 4.0	< 420	< 5.3	< 500	< 5.0	220	<5.5	-	< 470
sec-Butylbenzene			1,000,000*	7,000*	< 4.5	< 4.0	< 420	< 5.3	< 500	< 5.0	1,300	<5.5	-	< 470
Toluene			1,000,000	20,000	< 4.5	< 4.0	< 420	< 5.3	< 500	< 5.0	< 510	<5.5	-	< 7.6
Total Xylenes			1,000,000	19,500	< 4.5	5.8	< 420	< 5.3	18,200	< 5.0	< 510	<5.5	-	< 7.6
Polycyclic Aromatic Hydrocarbons (PAHs)	ug/Kg	EPA 8270D												
2-Methylnaphthalene			1,000,000*	560*	< 290	< 280	3,200	< 280	< 270	< 270	< 280	<280	-	< 270
Acenaphthene			2,500,000*	8,400*	< 290	< 280	< 2,600	< 280	< 270	< 270	< 280	<280	-	< 270
Benz(a)anthracene			1,000	1,000	< 290	< 280	**25,000**	< 280	< 270	< 270	< 280	<280	-	< 270
Benzo(a)pyrene			1,000	1,000	< 290	< 280	**23,000**	< 280	< 270	< 270	< 280	<280	-	< 270
Benzo(b)fluoranthene			1,000	7,800	< 290	< 280	**24,000**	< 280	< 270	< 270	< 280	<280	-	< 270
Benzo(k)fluoranthene			8,400	78,000	< 290	< 280	**24,000**	< 280	< 270	< 270	< 280	<280	-	< 270
Chrysene			780,000*	1,000*	< 290	< 280	**25,000**	< 280	< 270	< 270	< 280	<280	-	290
Fluoranthene			1,000,000	2,500,000	< 290	< 280	42,000	< 280	< 270	< 270	< 280	<280	-	610
Fluorene			1,000,000	2,500,000	< 290	< 280	7,300	< 280	< 270	< 270	< 280	<280	-	< 270
Indeno(1,2,3-cd)pyrene			7,800*	1,000*	< 290	< 280	**14,000**	< 280	< 270	< 270	< 280	<280	-	< 270
Naphthalene			2,500,000	5,600	< 290	< 280	**6,800**	< 280	< 270	< 270	< 280	<280	-	< 270
Phenanthrene			1,000,000	2,500,000	< 290	< 280	38,000	< 280	< 270	< 270	< 280	<280	-	450
Pyrene			1,000,000	2,500,000	< 290	< 280	35,000	< 280	< 270	< 270	< 280	<280	-	510

Abbreviations:
mg/kg = milligrams per kilograms or parts per million (ppm)
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Shading and bolding indicates that the detected concentration is above one or more regulatory criteria
* indicates the value is part of the Additional Polluting Substances (APS) 2015 Criteria

Table 1. Summary of Soil Analytical Results – Phase II and Phase III Investigations
Remedial Action Plan
9 Ferry Street 63 Main Street
Essex, CT

			AOC Investigated		AOC-6							
			Sample Name		SB-6	TP-A2-01	TP-A2-02	TP-A2-03	TP-A2-04	TB-4	TB-5	TB-6
			Sampled Interval (ft)		2-3	1-1.5	0.5-1	0.5-1	1-1.5	1-2.5	4-5	0.5-2
			Date Sampled		9/11/2015	6/9/2017	6/9/2017	6/9/2017	6/9/2017	10/4/2018	10/4/2018	10/4/2018
Analyte	**Units**	**Method**	**I/C DEC**	**GA PMC**								
Metals, total	mg/Kg											
Arsenic			10	-	7.7	2.36	6.14	**19.4**	6.97	**15.1**	5.75	6.16
Barium			140,000	-	107	42.9	135	72.9	152	-	-	-
Beryllium			2	-	< 0.30	< 0.27	< 0.25	0.38	0.48	-	-	-
Cadmium			1,000	-	< 0.37	< 0.33	1.15	1.19	1.4	-	-	-
Chromium			100	-	21	10.5	13.7	12.6	27.5	-	-	-
Copper			76,000	-	107	93	611	474	730	-	-	-
Lead			1,000	-	495	255	227	223	194	447	510	377
Mercury			610	-	15.9	3.41	13.8	20.7	3.82	-	-	-
Nickel			7,500	-	10.6	8.12	8.97	23	30	-	-	-
Vanadium			14,000	-	21.1	17.4	58.4	45.7	62.6	-	-	-
Zinc			610,000	-	51.5	66.5	225	225	494	-	-	-
Metals, SPLP	mg/L											
SPLP Arsenic			-	0.05	0.014	-	-	-	-	-	-	-
SPLP Barium			-	1	0.034	-	-	-	-	-	-	-
SPLP Chromium			-	0.5	< 0.010	-	-	-	-	-	-	-
SPLP Copper			-	1.3	0.035	-	-	-	-	-	-	-
SPLP Lead			-	0.015	**0.155**	-	-	-	-	-	-	-
SPLP Mercury			-	0.002	**0.004**	-	-	-	-	-	-	-
SPLP Nickel			-	1	< 0.010	-	-	-	-	-	-	-
SPLP Vanadium			-	0.05	< 0.010	-	-	-	-	-	-	-
SPLP Zinc			-	5	< 0.010	-	-	-	-	-	-	-
Extractable Total Petroleum Hydrocarbons (ETPH)	mg/Kg	CT ETPH										
ETPH			2,500	500	**580**	**4,100**	99	760	**1,700**	130	130	**810**
Volatile Organic Compounds (VOCs)	ug/Kg	EPA 8260C										
1,2,4-Trimethylbenzene			1,000,000*	2,800*	< 4.8	**3,500**	<4.7	<4.4	<5.3	**3,000**	250	< 420
1,3,5-Trimethylbenzene			1,000,000*	2,800*	< 4.8	1,600	<4.7	<4.4	<5.3	1,100	170	< 420
2-Isopropyltoluene			NE	NE	< 4.8	<500	<4.7	<4.4	<5.3	< 370	< 290	< 420
Benzene			200,000	20	< 4.8	<53	<4.7	<4.4	<5.3	**98**	< 22	< 32
Ethylbenzene			1,000,000	10,100	< 4.8	<530	<4.7	<4.4	<5.3	180	< 290	< 420
Naphthalene			2,500,000	5,600	< 4.8	760	<4.7	<4.4	<5.3	< 370	< 290	540
n-Butylbenzene			1,000,000*	7,000*	< 4.8	600	<4.7	<4.4	<5.3	< 370	< 290	< 420
n-Propylbenzene			1,000,000*	1,000*	< 4.8	400	<4.7	<4.4	<5.3	270	< 290	< 420
sec-Butylbenzene			1,000,000*	7,000*	< 4.8	390	<4.7	<4.4	<5.3	< 370	< 290	< 420
Toluene			1,000,000	20,000	< 4.8	570	<4.7	<4.4	<5.3	200	< 290	< 420
Total Xylenes			1,000,000	19,500	< 4.8	1,330	<4.7	<4.4	<5.3	1,700	< 290	< 420
Polycyclic Aromatic Hydrocarbons (PAHs)	ug/Kg	EPA 8270D										
2-Methylnaphthalene			1,000,000*	560*	< 290	**3,600**	< 250	< 250	< 290	< 260	< 270	530
Acenaphthene			2,500,000*	8,400*	< 290	400	< 250	< 250	< 290	< 260	< 270	350
Benz(a)anthracene			1,000	1,000	< 290	< 260	< 250	< 250	< 290	< 260	440	< 270
Benzo(a)pyrene			1,000	1,000	< 290	< 260	< 250	< 250	< 290	< 260	390	< 270
Benzo(b)fluoranthene			1,000	7,800	< 290	< 260	< 250	< 250	< 290	< 260	340	< 270
Benzo(k)fluoranthene			8,400	78,000	< 290	< 260	< 250	< 250	< 290	< 260	370	< 270
Chrysene			780,000*	1,000*	< 290	< 260	300	< 250	< 290	< 260	440	< 270
Fluoranthene			1,000,000	2,500,000	< 290	< 260	340	< 250	380	370	820	< 270
Fluorene			1,000,000	2,500,000	< 290	680	< 250	< 250	< 290	< 260	< 270	450
Indeno(1,2,3-cd)pyrene			7,800*	1,000*	< 290	< 260	< 250	< 250	< 290	< 260	270	< 270
Naphthalene			2,500,000	5,600	< 290	410	< 250	< 250	< 290	290	< 270	< 270
Phenanthrene			1,000,000	2,500,000	< 290	1,500	< 250	< 250	< 290	< 260	450	1,100
Pyrene			1,000,000	2,500,000	< 290	300	270	< 250	< 290	390	710	< 270

Abbreviations:
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Table 2. Summary of Groundwater Analytical Results – Phase II and Phase III Investigations
Remedial Action Plan
9 Ferry Street 63 Main Street
Essex, CT

				AOC Investigated	AOC-1		AOC-2		AOC-3	
				Sample Name	MW-1	MW-1	MW-2	MW-3	MW-3	MW-2
				Date Sampled	9/18/2015	10/23/2018	9/18/2015	10/23/2018	9/18/2015	10/23/2018
Analyte	**Units**	**GWPC**	**SWPC**	**I/C GWVC**						
Extractable Total Petroleum Hydrocarbons (ETPH)	mg/L									
ETPH		0.25	0.25*	-	<0.070	< 0.069	**0.34**	< 0.081	**0.78**	< 0.066
Volatile Organic Compounds (VOCs)	ug/L									
Benzene		1	710	530	<3.5	< 0.7	<0.7	< 0.7	<0.7	3.4
1,2,4-Trimethylbenzene		140*	150*	12,800*	<5.0	<1.0	10	<1.0	<1.0	<1.0
1,3,5-Trimethylbenzene		140*	260*	10,000*	<5.0	<1.0	3.1	<1.0	<1.0	<1.0
Methyl t-butyl ether (MTBE)		100	NE	50,000	6.7	3.8	<1.0	< 1.0	<1.0	< 1.0
Naphthalene		280	210*	-	<5.0	< 1.0	<1.0	< 1.0	<1.0	21
Vinyl chloride		2	15,750	2	<5.0	< 1.0	<1.0	< 1.0	<1.0	1
Polycyclic Aromatic Hydrocarbons (PAHs)	ug/Kg									
2-Methylnaphthalene		28*	62*	-	0.23	< 0.11	0.09	< 0.11	0.06	0.27
Acenaphthene		420*	150*	-	1.9	0.96	<0.05	< 0.05	0.18	0.11
Anthracene		2,000	1,100,000	-	<0.05	0.06	< 0.05	< 0.05	< 0.05	0.06
Benz(a)anthracene		0.06	0.3	-	<0.05	< 0.06	< 0.05	< 0.05	< 0.05	**0.1**
Benzo(a)pyrene		0.2	0.3	-	<0.05	< 0.06	< 0.05	< 0.05	< 0.05	0.07
Benzo(b)fluoranthene		0.08	0.3	-	<0.05	< 0.06	< 0.05	< 0.05	< 0.05	0.07
Benzo(k)fluoranthene		0.5	0.3	-	<0.05	< 0.06	< 0.05	< 0.05	< 0.05	0.06
Chrysene		4.8*	0.54*	-	<0.05	< 0.06	< 0.05	< 0.05	< 0.05	0.09
Fluoranthene		280	3,700	-	0.23	< 0.06	0.05	0.09	<0.05	0.28
Fluorene		280	140,000	-	0.53	< 0.06	<0.05	< 0.05	0.06	0.05
Naphthalene		280	210*	-	1.3	< 0.11	0.27	< 0.11	0.2	14
Phenanthrene		200	0.077	-	0.52	< 0.06	0.09	0.06	0.12	0.26
Pyrene		200	110,000	-	0.15	< 0.06	<0.05	0.1	0.06	0.23
Total Metals	mg/L									
Arsenic		0.05	0.004	-	**0.01**	-	**0.007**	-	**0.01**	-
Barium		1	NE	-	0.658	-	0.335	-	0.102	-
Chromium		0.05	0.11	-	0.002	-	0.006	-	0.018	-
Copper		1.3	0.048	-	0.045	-	**0.124**	-	**0.333**	-
Lead		0.015	0.013	-	0.01	-	**0.036**	-	**0.034**	-
Mercury		0.002	0.0004	-	< 0.0002	-	< 0.0002	-	0.0005	-
Nickel		0.1	0.88	-	0.004	-	0.01	-	0.009	-
Vanadium		0.05	NE	-	< 0.002	-	0.005	-	0.011	-
Zinc		5	0.123	-	0.024	-	**0.219**	-	0.086	-

Abbreviations:
ug/L = micrograms per liter or parts per billion (ppb)
CAS No. = Chemical Abstracts Service Number
NE = Not Established
GWPC = Groundwater Protection Criteria
SWPC = Stormwater Protection Criteria
I/C GWVC = Industrial/Commercial Groundwater Volatilization Criteria

Notes:
Bolding and Shading indicates that the detected concentration is above one or more regulatory criteria
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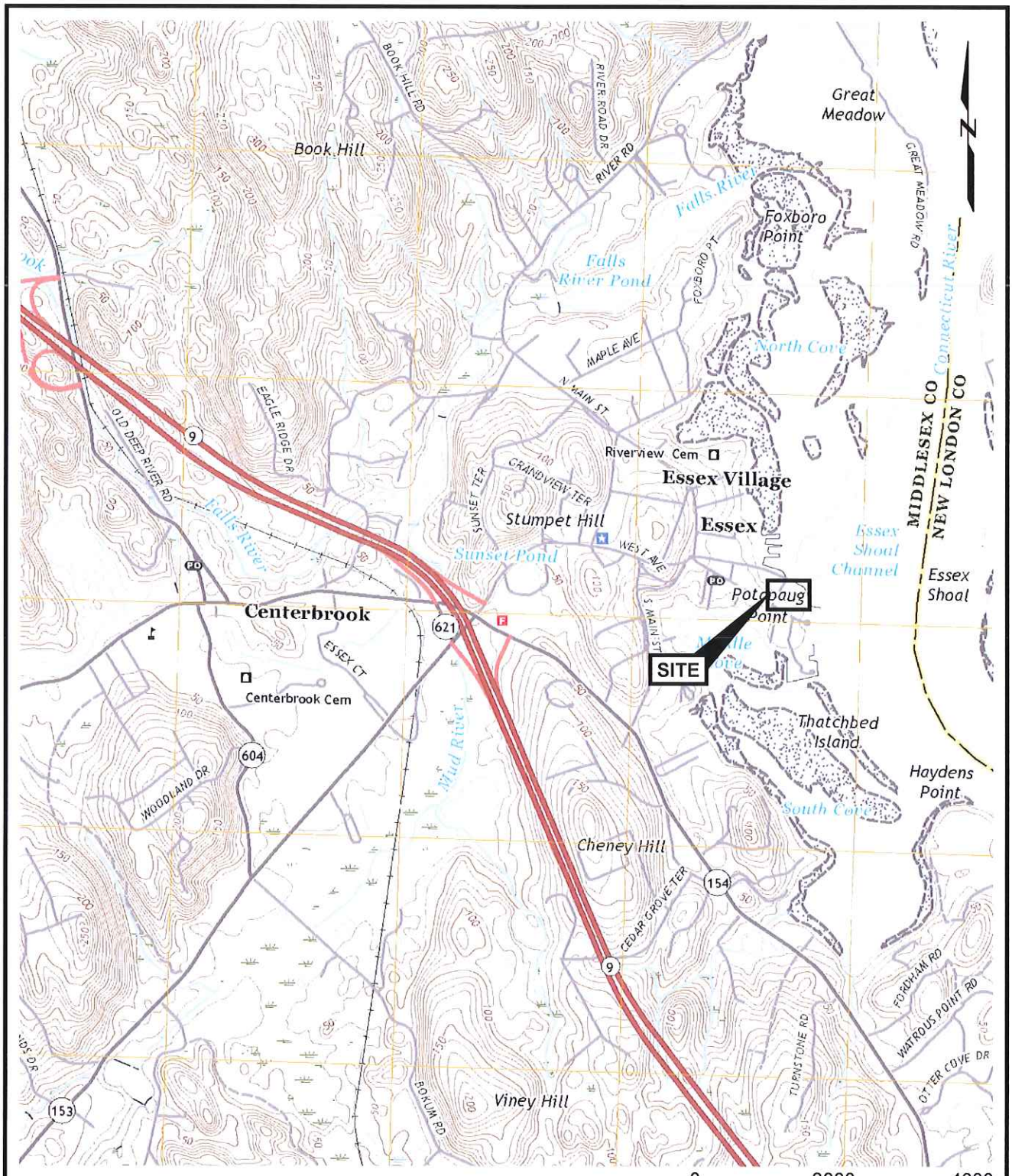
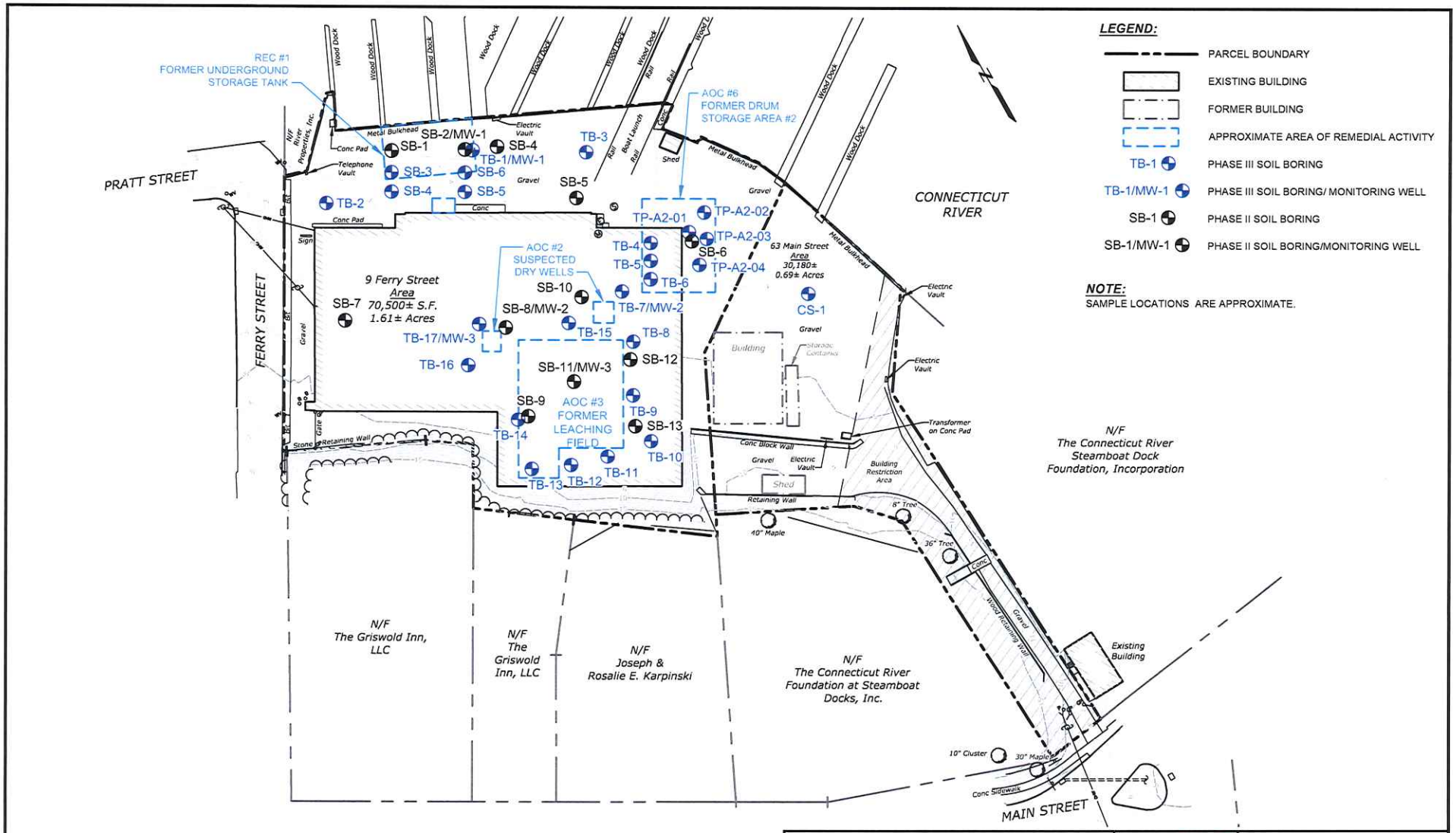
Figures



SOURCE: 2018 USGS Quadrangle Essex, CT.

Remedial Action Plan 9 Ferry Street & 63 Main Street Essex, Connecticut	GEI Consultants	SITE LOCATION MAP
Essex Boat Works Essex, Connecticut	Project 1905658	February 2020 Fig. 1



SOURCE:
PLAN BASED ON 2016 SURVEY PREPARED BY MILONE & MACBROOM, INC., PROVIDED BY CENTERBROOK ARCHITECTS & PLANNERS ON 8/15/2017.

0 60 120
SCALE: 1" = 60'

Remedial Action Plan 9 Ferry Street & 63 Main Street Essex, Connecticut	GEI Consultants	AOC LOCATIONS REQUIRING REMEDIATION
Essex Boat Works Essex, Connecticut	Project 1704852	February 2020 Fig. 2

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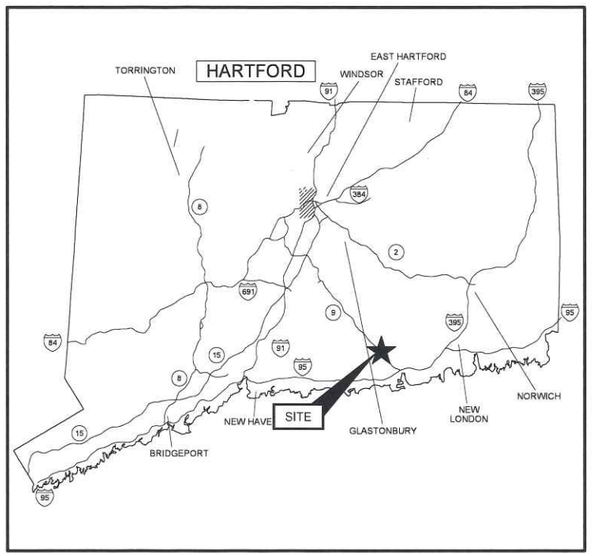
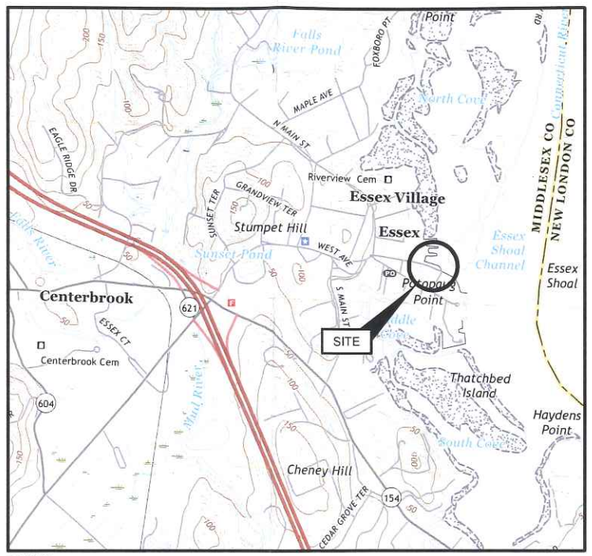
ESSEX BOAT WORKS

9 FERRY STREET
ESSEX, CONNECTICUT



STATE MAP
(NOT TO SCALE)



SOURCE:
USGS, 2018 TOPOGRAPHIC MAP, ESSEX, CT

SITE LOCATION MAP
(NOT TO SCALE)

SHEET INDEX

SHEET NO.	DRAWING NO.	TITLE
1	B-1	COVER SHEET
2	B-2	NOTES
3	B-3	EXISTING CONDITIONS
4	B-4	EXCAVATION PLAN
5	B-5	EROSION AND SEDIMENT CONTROL PLAN
6	B-6	RESTORATION PLAN

PREPARED FOR:

ESSEX BOAT WORKS
9 FERRY STREET
ESSEX, CONNECTICUT

PREPARED BY:

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FOR CONSTRUCTION

GEI PROJECT NO. 2100855

NO.	DATE	ISSUE/REVISION	APP
0	5/10/2021	FOR CONSTRUCTION	MJO

STATE OF CONNECTICUT · ERIC SPIZZIRRI · 23566 · LICENSED PROFESSIONAL ENGINEER

DWG. NO.
B-1

SHEET NO.
1 OF 6

A: **PROJECT DESCRIPTION:**

1. THE REMEDIAL ACTION AT THE 9 FERRY STREET FACILITY CONSISTS OF THE EXCAVATION, AND REMOVAL OF SHALLOW SOIL MATERIAL THAT IS LOCATED IN THE FOOTPRINT OF THE FORMER SEPTIC SYSTEM, FORMER DRYWELLS, AND FORMER DRUM AND WASTE CONTAINER STORAGE AREA. THIS INCLUDES, BUT IS NOT LIMITED TO, EXCAVATION, TRANSPORTATION AND DISPOSAL OF IMPACTED SOILS WITHIN THE AREA SHOWN WITHIN THE DRAWINGS, BACKFILL OF EXCAVATION AREAS, AND LIMITED SITE RESTORATION.
2. THE SITE IS LOCATED IN THE TOWN OF ESSEX AT THE CORNER OF FERRY STREET AND PRATT STREET. THE FACILITY CONSISTS OF A SINGLE STRUCTURE ON APPROXIMATELY 1.61 ACRES.
3. IT IS NOT THE INTENT OF THE DRAWINGS TO SHOW EVERY PIPE, WIRE, CONDUIT, UTILITY CONNECTION, DETAIL, AND APPURTENANCE NECESSARY TO COMPLETE THE WORK. HOWEVER, SUCH CONNECTIONS AND DETAILS THAT MAY BE NECESSARY TO COMPLETE THE WORK IN ACCORDANCE WITH DRAWINGS, CODE REQUIREMENTS, AND TO THE ENGINEER'S SATISFACTION SHALL BE INCLUDED IN THE WORK.
4. ALL TASKS, REQUIREMENTS, DELIVERABLES, ETC. ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR UNLESS SPECIFICALLY ASSIGNED TO OTHERS. PROJECT WORK PERFORMED BY THE CONTRACTOR INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:
   a. PREPARE AND IMPLEMENT A CONTRACTOR HEALTH AND SAFETY PLAN.
   b. INSTALL, OPERATE, AND MAINTAIN TEMPORARY FACILITIES AND CONTROLS, INCLUDING:
      i. TEMPORARY PERIMETER FENCE/BARRIER FOR EXCAVATIONS LEFT OPEN OVERNIGHT.
      ii. STORM WATER AND EROSION CONTROLS.
      iii. WORKER HEALTH AND SAFETY MEASURES.
      iv. EQUIPMENT CLEANING FACILITIES.
      v. TEMPORARY SANITARY FACILITIES, IF NECESSARY.
      vi. DUST CONTROL.
      vii. EXCAVATED MATERIAL (SOIL AND DEBRIS) MANAGEMENT/LOADING AREAS.
      viii. OBTAINING ALL LOCAL PERMITS AND ANY OTHER GOVERNMENT REQUIREMENTS REQUIRED FOR COMPLETION OF THE WORK OTHER THAN THOSE IDENTIFIED AS BEING OBTAINED BY OTHERS.
   c. PERFORM THE WORK
      i. IDENTIFY AND PROTECT EXISTING UTILITIES AND SITE FEATURES TO REMAIN AFTER THE WORK IS COMPLETE.
      ii. COMPLETE A GEOPHYSICAL SURVEY TO DETERMINE IF THE EXISTING DRY WELLS ARE A FUNCTIONING COMPONENT OF THE CURRENT SEPTIC SYSTEM. ENSURE MARKOUTS OF ALL LOCATED UTILITIES ARE VISIBLE AND ACCESSIBLE (PAINT AND FLAGGING) FOR THE OWNER TO SURVEY.
      iii. SITE PREPARATION.
      iv. COLLECT WASTE DISPOSAL CHARACTERIZATION SAMPLES REQUIRED TO MEET THE DISPOSAL FACILITY REQUIREMENTS PRIOR TO INTRUSIVE WORK.
      v. PERFORM EXCAVATIONS AS DIRECT LOAD OPERATIONS, WHENEVER PRACTICABLE.
      vi. TRANSPORT AND DISPOSE OFF-SITE ANY EXCAVATED MATERIAL.
      vii. RESTORE DISTURBED SECTIONS OF THE SITE.
   d. PROVIDE CLEAR PATHWAYS AT ALL TIMES FOR ANY EMERGENCY VEHICLES REQUIRING ACCESS TO THE SITE.
   e. PROVIDE AND PERFORM ANY OTHER EQUIPMENT, WORK, OR SUBMITTALS REQUIRED TO FACILITATE ITEMS a THROUGH d ABOVE AND THE WORK SHOWN ON THE DRAWINGS.

B: **CONTRACTOR REQUIREMENTS:**

1. PERFORM THE SCOPE OF WORK CONTAINED IN THE DRAWINGS.
2. IDENTIFY PLANS FOR STORAGE, LAY DOWN, AND MATERIAL HANDLING FACILITIES AND LOCATIONS WITH THE BID SUBMITTAL.
3. FOR ANY WORK PERFORMED IN CLOSE PROXIMITY TO COMMERCIAL PROPERTIES, UTILITIES OR ANY OTHER THIRD-PARTY PROPERTY, UTILIZE EVERY PRECAUTION TO PROTECT THE PROPERTY, UTILITY LINES, TREES, WALLS, AND OTHER STRUCTURES AND RELATED APPURTENANCES FROM DAMAGE. ANY DAMAGE THAT THE CONTRACTOR MAY CAUSE DIRECTLY OR INDIRECTLY OUTSIDE THE PROJECT LIMITS SHALL BE REPAIRED OR REPLACED IN KIND IN A PROMPT MANNER AS DIRECTED BY ESSEX BOAT WORKS, AND/OR THE ENGINEER AT NO ADDITIONAL COST TO ESSEX BOAT WORKS.
4. REPAIR ANY DAMAGE CAUSED DIRECTLY OR INDIRECTLY INSIDE THE PROJECT LIMITS AS DIRECTED BY THE ENGINEER AT NO ADDITIONAL COST TO ESSEX BOAT WORKS.
5. COMPLY WITH ALL APPLICABLE OSHA SAFETY REGULATIONS DURING THE PERFORMANCE OF THE WORK.

B: **CONTRACTOR REQUIREMENTS CONT.:**

6. DO NOT CONDUCT WORK OUTSIDE OF THE PERMITTED WORKING HOURS (MONDAY THROUGH FRIDAY, 7:00 AM TO 5:00 PM, NO WORK ON FEDERAL HOLIDAYS) WITHOUT ADVANCED APPROVAL.

C: **UTILITY COORDINATION AND PROTECTION:**

1. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ANY AND ALL REQUIRED NOTIFICATIONS TO UTILITY COMPANIES PRIOR TO COMMENCING THE WORK, AND FOR RESPONSE TO ANY EMERGENCIES THAT MAY ARISE DURING THE WORK. THE EXACT LOCATION AND TYPE OF UTILITY IS TO BE DETERMINED BY THE CONTRACTOR WITHOUT RELIANCE ON INFORMATION PROVIDED BY THE OWNER OR THE ENGINEER. SEVERAL UTILITIES MAY CURRENTLY SERVE THE SITE OR ADJACENT PROPERTIES INCLUDING, BUT NOT LIMITED TO, ELECTRIC, NATURAL GAS, WATER, SANITARY SEWER, STORM SEWER, AND/OR TELEPHONE/OTHER COMMUNICATIONS (E.G. FIBER OPTIC CABLE).
2. MAINTAIN ALL UTILITY MARKOUTS FOR THE DURATION OF THE PROJECT. PROVIDE COPIES OF ALL ONE CALL NUMBERS/TICKETS/UTILITIES PLATES/PRIVATE UTILITY LOCATION INFORMATION/TEST PIT LOGS TO THE ENGINEER PRIOR TO BEGINNING INTRUSIVE ACTIVITIES. THE ENGINEER WILL MAINTAIN COPIES ON SITE IN A CLEARANCE PACKAGE.
3. COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE UTILITY PROTECTION LAWS OR REGULATIONS.
4. CONTACT AND COOPERATE WITH UTILITY COMPANIES TO LOCATE ALL UTILITIES (INCLUDING PIPELINES, CABLES, POWER POLES, GUY WIRES, AND OTHER STRUCTURES) ON THE SITE PRIOR TO BEGINNING THE WORK.
5. CONDUCT A UTILITY SEARCH AND IDENTIFICATION PRIOR TO COMMENCEMENT OF INTRUSIVE FIELD ACTIVITIES AND RESOLVE ALL POTENTIAL CONFLICTS.
6. ALL UTILITIES ENCOUNTERED SHOULD BE CONSIDERED LIVE UNTIL CONFIRMED BY THE UTILITY OWNER.
7. PROTECT ALL UTILITIES FROM DAMAGE DURING CONSTRUCTION. IF DAMAGED, REPAIR THE UTILITIES AS REQUIRED BY THE UTILITY'S OWNER AT THE CONTRACTOR'S EXPENSE.
8. IF A UTILITY IS ENCOUNTERED THAT IS NOT SHOWN ON THE CONTRACT DRAWINGS, OR OTHERWISE NOT MADE KNOWN TO THE CONTRACTOR PRIOR TO BEGINNING THE WORK, PROMPTLY TAKE THE NECESSARY STEPS TO ASSURE THAT THE UTILITY IS NOT DAMAGED, AND NOTIFY THE ENGINEER IN WRITING OF THE PRESENCE OF THE UTILITY. THE ENGINEER WILL REVIEW THE CONDITIONS AND DETERMINE THE EXTENT, IF ANY, TO WHICH A CHANGE IS REQUIRED IN THE CONTRACT DOCUMENTS TO REFLECT AND DOCUMENT THE CONSEQUENCES OF THE EXISTENCE OF THE UTILITY.
9. IMMEDIATELY NOTIFY THE PROPERTY OWNER AND THE ENGINEER OF ANY INCIDENT INVOLVING A UTILITY.
10. SOFT DIG IN THE VICINITY OF SUSPECTED UTILITIES WITHIN THE EXCAVATION AREA.

D: **SITE MANAGEMENT NOTES:**

1. OTHER THAN THE PROJECT LIMITS, THE SITE LAYOUT IS CONCEPTUAL/APPROXIMATE AND MAY BE ADJUSTED TO FACILITATE THE CONTRACTOR'S MEANS AND METHODS FOR PERFORMING THE WORK.
2. CONTRACTOR MUST TAKE INTO ACCOUNT LOCATIONS OF WELLS, UTILITIES, AND OTHER STRUCTURES TO PROTECT WHEN LAYING OUT THE WORK ZONES, CONTROLS, FACILITIES AND ON-SITE EQUIPMENT TEMPORARY STORAGE.
3. PERFORM ALL SITE PREPARATION WORK INCLUDING INSTALLATION OF TEMPORARY FACILITIES AND BARRICADES PRIOR TO THE START OF EXCAVATION.

E: **EROSION AND SEDIMENT CONTROLS:**

1. DO NOT POLLUTE ANY STREAM, RIVER, WATERWAY, ROADWAY, OR SOIL WITH FUEL, OIL, GREASE, LUBRICANT, HYDRAULIC FLUID, BITUMEN, CALCIUM CHLORIDE, ACID, BASE, OR OTHER HARMFUL MATERIALS. COMPLY WITH APPROPRIATE FEDERAL, STATE, AND LOCAL REGULATIONS AND GUIDELINES FOR THE HANDLING AND DISPOSAL OF ALL MATERIALS.
2. ALL CONTAMINATED MATERIALS (DEBRIS, SOIL, WATER, EFFLUENT, BY-PRODUCT, WASTE, TRASH, CHEMICAL, FUEL, OIL, GREASE, LUBRICANT, BITUMEN, CALCIUM CHLORIDE, ACID, BASE OR OTHER HARMFUL MATERIAL ETC.) RESULTING FROM THE WORK SHALL BE DISPOSED IN ACCORDANCE WITH ALL APPLICABLE OR RELEVANT AND APPROPRIATE FEDERAL AND STATE LAWS PRIOR TO COMPLETION OF CONSTRUCTION.
3. STORM WATER RUNOFF SHALL BE CONTROLLED AS REQUIRED FOR THE CONTROL OF EROSION AND SEDIMENTATION AND AS REQUIRED TO PREVENT THE DISCHARGE OF STORM WATER OFF-SITE, WHICH HAS COME INTO CONTACT WITH STOCKPILED SOIL.
4. DIVERT OR OTHERWISE PREVENT STORM WATER AND SURFACE WATER FROM ENTERING OPEN EXCAVATIONS TO THE GREATEST EXTENT PRACTICABLE WITHOUT CAUSING DAMAGE OR FLOODING TO ADJACENT PROPERTIES.

E: **EROSION AND SEDIMENT CONTROLS CONT.:**

5. INSTALL OF EROSION AND SEDIMENTATION CONTROLS PRIOR TO COMMENCING INTRUSIVE WORK.
6. MAINTAIN EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL FINAL STABILIZATION OF THE SITE HAS BEEN ACHIEVED.
7. INSPECT EROSION CONTROLS ON A DAILY BASIS DURING THE WORK AND REPAIR ANY DEFICIENCIES IMMEDIATELY.
8. REMOVE AND DISPOSE OF ALL EROSION CONTROLS AND ACCUMULATED SEDIMENTS AT THE COMPLETION OF WORK.

F: **PERMITS:**

1. THIS SECTION DOES NOT DESCRIBE ALL PERMITS REQUIRED FOR PERFORMANCE OF THE WORK. ANY PERMITS NOT IDENTIFIED IN THIS SECTION, OR ELSEWHERE IN THE CONTRACT DOCUMENTS, ARE THE RESPONSIBILITY OF CONTRACTOR. THE CONTRACTOR WILL ALSO BE RESPONSIBLE FOR PROVIDING ANY TECHNICAL AND EQUIPMENT RELATED DATA REQUIRED FOR OWNER OR THE ENGINEER TO OBTAIN THE NECESSARY PERMITS.
2. REGARDLESS OF WHO IS RESPONSIBLE FOR OBTAINING A PERMIT, THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF ALL PERMITS.
3. THE ENGINEER WILL PROCURE THE REQUIRED SEPTIC ABANDONMENT PERMIT WITH THE TOWN OF ESSEX.
4. PROVIDE ALL DATA REQUESTED BY OWNER OR THE ENGINEER REQUIRED TO SUPPORT PERMIT APPLICATIONS. WHEN NECESSARY, OWNER AND/OR THE ENGINEER MAY PROVIDE DATA SUMMARIES OR OTHER PROJECT INFORMATION TO THE CONTRACTOR IN SUPPORT OF CONTRACTOR DATA SUBMITTALS.
5. ANY COORDINATION AND/OR ASSISTANCE BETWEEN THE CONTRACTOR AND OWNER OR THE ENGINEER IS PROVIDED IN THE INTEREST OF EXPEDITING THE PROJECT. PROVISION OF COORDINATION AND/OR ASSISTANCE DOES NOT RELIEVE THE CONTRACTOR OF ANY OBLIGATIONS REGARDING THE TIMELINESS AND COMPLETENESS RELATIVE TO THE PERMIT SUBMITTALS.
6. SUBMIT COPIES OF ALL SUPPLEMENTAL DATA REQUIRED BY PERMITS WITH DOCUMENTATION THAT THE SUPPLEMENTAL DATA WAS PROVIDED TO THE ENTITY THAT ISSUED THE PERMIT ACCORDING TO THE SCHEDULE REQUIRED BY THE PERMIT.
7. SUBMIT COPIES OF FULLY EXECUTED PERMIT APPLICATIONS AND FINAL PERMITS TO OWNER AND THE ENGINEER.

G: **CLOSEOUT PROCEDURES:**

1. CLOSEOUT PROCEDURES COVERS THE ADMINISTRATIVE AND TECHNICAL REQUIREMENTS FOR FINAL CLEANING, INSPECTION, PROJECT AS-BUILT DOCUMENTS, SYSTEM DEMONSTRATIONS AND ADJUSTMENTS, WARRANTIES, BONDS, FINAL PAYMENT, AND OTHER PROCEDURES FOR PROJECT CLOSEOUT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
2. WHEN THE CONTRACTOR CONSIDERS THE WORK, OR DESIGNATED PORTION THEREOF, TO BE AT SUBSTANTIAL COMPLETION, PROVIDE WRITTEN NOTICE, WITH A LIST OF ITEMS TO BE COMPLETED OR CORRECTED (PUNCH LIST), THE VALUE OF ITEMS ON THE LIST, AND REASONS WHY THE WORK IS NOT COMPLETE. THE ENGINEER WILL INSPECT THE WORK TO DETERMINE THE STATUS OF COMPLETION.
3. UPON APPROVAL FROM THE ENGINEER, CORRECT ANY DEFICIENT AND/OR INCOMPLETE WORK AND NOTIFY THE ENGINEER UPON COMPLETION. THE ENGINEER WILL THEN RE-INSPECT THE WORK FOR THE PURPOSE OF FINAL ACCEPTANCE.
4. PROVIDE COPIES OF ALL PROJECT RECORDS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
   a. MANIFESTS AND BILLS OF LADING.
   b. WEIGHT TICKETS.
   c. TESTING RESULTS.
   d. HEALTH AND SAFETY REPORTS.
   e. COPIES OF PERMITS. SUBMIT WRITTEN CONFIRMATION THAT ALL PERMITS HAVE BEEN CLOSED WITH THEIR GOVERNING AUTHORITY AND THAT ANY AND ALL REMAINING FEES HAVE BEEN PAID IN FULL.
5. SUBMIT AN APPLICATION FOR FINAL PAYMENT AFTER THE FINAL ACCEPTANCE OF THE WORK.

H: **EXCAVATION AND SOIL MANAGEMENT:**

1. THE WORK REQUIRED UNDER THIS SECTION INCLUDES FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, AND PERFORMING ALL OPERATIONS REQUIRED FOR THE EXCAVATION, HANDLING, AND BACKFILLING OF MATERIAL DURING PERFORMANCE OF THE WORK.
2. LIMITS OF THE EXCAVATION AREA ARE INDICATED ON THE CONTRACT DRAWINGS.
3. THE ANTICIPATED AREA OF THE EXCAVATION AND FILL WAS ESTABLISHED BASED ON THE EXISTING SITE DATA. THE CONTRACTOR SHOULD BE PREPARED TO ACCOMMODATE POTENTIAL FIELD ADJUSTMENTS AS NECESSARY.
4. EXCAVATED MATERIAL HANDLING INCLUDES:
   a. STRIPPING AND STOCKPILING EXISTING STONE SURFACE.
   b. EXCAVATION AND DIRECT LOADING OF SOIL FOR DISPOSAL.
5. HANDLE MATERIALS IN A MANNER THAT WILL PROTECT SITE PERSONNEL, THE PUBLIC, AND THE ENVIRONMENT IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS AND TO PREVENT CROSS CONTAMINATION.
6. EQUIPMENT, STORAGE CONTAINERS, AND TANKS BROUGHT ON-SITE FOR THE PURPOSE OF HANDLING AND/OR STORAGE OF MATERIALS SHALL BE CLEAN AND CERTIFIED DECONTAMINATED PRIOR TO ENTRY TO THE SITE. CONSTRUCTION EQUIPMENT AND MATERIALS TO BE INCORPORATED INTO THE WORK SHALL BE PLACED IN A LOCATION SO AS NOT TO DAMAGE ANY PART OF THE WORK OR EXISTING FACILITIES, AND WILL BE STORED AT A SUFFICIENTLY SAFE DISTANCE FROM ANY CONTAMINATED LOCATION OR MATERIAL, COVERED AGAINST THE WEATHER, AND ELEVATED.
7. PERFORM THE EXCAVATION WORK BELOW THE WATER TABLE IN THE WET. LINE TRUCK BEDS USED FOR TRANSPORTING SOILS TO THE DISPOSAL FACILITY.
8. GRAVITY DEWATER SATURATED SOILS WITHIN THE EXCAVATION FOOTPRINT, ON AN AS NEEDED BASIS. APPLY SOIL AMENDMENT PRODUCTS (CEMENT KILN DUST (CKD) OR OTHER APPROVED BY THE ENGINEER) ONLY FOR SOILS THAT ARE INHERENTLY TOO WET AND CANNOT BE DRIED SUFFICIENTLY FOR TRANSPORT OR ACCEPTANCE AT THE RECEIVING FACILITY USING OTHER TECHNIQUES.
9. ALL EQUIPMENT BROUGHT ON SITE FOR THE PURPOSE OF THE WORK SHALL BE APPROPRIATELY SIZED. THE OWNER OR ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT BROUGHT TO THE SITE IF DEEMED UNSUITABLE FOR THE WORK DUE TO ITS SIZE, OR FOR ANY OTHER REASON.
10. PROVIDE DOCUMENTATION IN THE FORM OF WEIGHT TICKETS FROM THE DISPOSAL FACILITY LOCATIONS.

I: **BACKFILL:**

1. BACKFILL BELOW THE WATER TABLE SHALL CONSIST OF ¾" CRUSHED STONE MEETING THE GRADATION REQUIREMENTS DESCRIBED IN CT DEPARTMENT OF TRANSPORTATION SECTION M.01 - GRADATION OF AGGREGATE.
2. BACKFILL ABOVE THE WATER TABLE SHALL CONSIST OF IMPORTED CLEAN BACKFILL MATERIAL MEETING THE GRADATION REQUIREMENTS DESCRIBED IN CT DEPARTMENT OF TRANSPORTATION SECTION M.02.01 - GRANULAR FILL.
3. INSTALL GEOTEXTILE FABRIC ABOVE CRUSHED STONE PRIOR TO INSTALLATION OF GRANULAR FILL LIFTS.
4. COMPLETE A SOURCE EVALUATION FOR ANY IMPORTED FILL BROUGHT TO THE SITE. SUBMIT THE RESULTS FROM THE BORROW SOURCE EVALUATION FOR EACH SOURCE TO BE USED AS IMPORTED CLEAN BACKFILL. INCLUDE THE FOLLOWING:
   a. NAME, ADDRESS, TELEPHONE NUMBER, FACSIMILE NUMBER, AND WEB SITE ADDRESS OF BORROW SOURCE.
   b. CERTIFICATE OF CLEAN FILL FROM THE BORROW LOCATION STATING THAT THE SOIL IS NATIVE IN ORIGIN AND FREE OF CONTAMINATION.
   c. ANALYTICAL RESULTS FROM THE BORROW SOURCE, SPECIFIC TO THE ACTUAL FILL BEING IMPORTED TO THE SITE, AS CONFIRMATION THAT THE MATERIAL IS FREE OF CONTAMINATION.
5. PLACE BACKFILL USING A METHOD THAT DOES NOT DISTURB OR DAMAGE ADJACENT STRUCTURES OR PROPERTY.
6. PLACE BACKFILL IN LIFTS THAT DO NOT EXCEED 12 INCHES THICK BEFORE COMPACTION. LIFTS AND COMPACT WITH A MINIMUM FOUR PASSES OF A VIBRATORY PLATE COMPACTER OR EQUIVALENT.
7. MAINTAIN MOISTURE CONTENT WITHIN +3 TO -3 PERCENT OF OPTIMUM MOISURE CONTENT.

I: **BACKFILL CONT.:**

8. COMPACT THE GRANULAR FILL BACKFILL TO THE PERCENT OF THE MAXIMUM DRY DENSITY (AS DETERMINED BY THE MODIFIED PROCTOR DURING THE BORROW SOURCE EVALUATION) INDICATED IN THE TABLE. PERFORM COMPACTION TESTING TO ASSESS THE DEGREE OF COMPACTION. DO NOT PLACE OVERLYING LIFTS OF BACKFILL UNTIL IN PLACE COMPACTION TESTS INDICATE THAT THE CURRENT LAYER HAS BEEN COMPACTED IN ACCORDANCE WITH THIS CRITERION.

PROJECT AREA	PERCENT COMPACTION (%)	TEST FREQUENCY (PER LIFT OF MATERIAL)
LESS THAN 2 FEET BELOW FINISHED GRADE	95	50 FT BY 50 FT
GREATER THAN 2 FEET BELOW GRADE	92	50 FT BY 50 FT

9. USE AN APPROPRIATELY LICENSED TESTING SUBCONTRACTOR THAT IS CERTIFIED TO TEST SOIL BY ASTM D6938-LATEST EDITION, STANDARD TEST METHOD FOR IN-PLACE DENSITY AND WATER CONTENT OF SOIL AND SOIL-AGGREGATE BY NUCLEAR METHODS-SHALLOW DEPTH.
10. THE OWNER AND/OR ENGINEER RESERVES THE RIGHT TO REJECT BACKFILL THAT DIFFERS VISUALLY FROM THE IDENTIFIED SOURCE MATERIAL AND TO RANDOMLY TEST BACKFILL MATERIALS TO ENSURE MATERIAL IS FREE OF CONTAMINATION. BACKFILL THAT IS FOUND TO NOT MEET THE PROJECT REQUIREMENTS SHALL BE REMOVED AT NO ADDITIONAL EXPENSE TO THE OWNER.

J: **FILTER FABRIC:**

1. FILTER FABRIC SHALL BE LONG-CHAIN POLYMERIC FILAMENT, WOVEN OR NON-WOVEN CLOTH WITH A MELTING POINT OF NOT LESS THAN 200 DEGREES F. MUST MEET THE ASTM D-751 (PUNCTURE STRENGTH - 125 LB.), ASTM D-1117 (MULLEN BURST STRENGTH - 400 PSI) AND ASTM D-1682 (TENSILE STRENGTH - 300 LB.) SPECIFICATIONS. AFTER EXPOSURE TO 300 DEGREES F FOR 1 HOUR (UNDER NO STRESS), IT SHALL RETAIN 80 PERCENT OF ITS ORIGINAL GRAB STRENGTH. DRAINAGE FABRIC WITH AN EQUIVALENT OPENING SIZE OF #80 SIEVE. DRAINAGE FABRIC SHALL BE MIRAFI 180-N, AMOCO 4552, WEBTEC N70, GEOLON N70, CARTHAGE FX-80S OR APPROVED EQUAL.
2. THE FABRIC SHALL BE CAPABLE OF SUPPORTING, WITHOUT TEARING, CONSTRUCTION EQUIPMENT NEEDED FOR PLACEMENT OF MATERIALS ON TOP OF THE FABRIC. THE FABRIC MUST BE CAPABLE OF RETAINING THE SUBGRADE AND SUBBASE SOILS WHILE PERMITTING THE FREE PASSAGE OF WATER FROM THOSE SOILS THROUGH THE FABRIC AND INTO THE BACKFILL. STORAGE AND HANDLING OF FILTER MEETING THE GRADATION REQUIREMENTS DESCRIBED IN CT DEPARTMENT OF TRANSPORTATION SECTION M.02.01 - GRANULAR FILTER FABRIC SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
3. PRIOR TO ITS USE, THE FABRIC SHALL BE STORED IN A PROTECTIVE WRAPPING THAT WILL SHIELD IT FROM SUNLIGHT, HEAT, ULTRAVIOLET RAYS, MUD, DIRT, DUST AND DEBRIS TO THE EXTENT THAT ITS STRENGTH OR TOUGHNESS IS NOT DIMINISHED. TORN OR PUNCTURED FILTER FABRIC SHALL NOT BE USED.

K: **IMPACTED MATERIALS:**

1. COLLECT WASTE DISPOSAL CHARACTERIZATION SAMPLES REQUIRED TO MEET THE DISPOSAL FACILITY REQUIREMENTS PRIOR TO INTRUSIVE WORK.
2. IF TESTING IDENTIFIED THAT THE MATERIAL REQUIRES SPECIAL HANDLING OR DISPOSAL, THE OWNER/ENGINEER WILL DIRECT THE CONTRACTOR TO PROVIDE ALTERNATIVE PRICING FOR APPROPRIATE TRANSPORTATION AND DISPOSAL OF THE IMPACTED MATERIALS.

FOR CONSTRUCTION

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Essex, CT

STATE OF CONNECTICUT · ERIC EPSTEIN · 33566 · LICENSED PROFESSIONAL ENGINEER

P.E. No.:	33566
Approved:	MJO
Checked:	MJO
Drawn:	JES
Designed:	EAS
GEI Project	2100855

Attention: 0 1"
If this scale bar does not measure 1" then drawing is not original scale.

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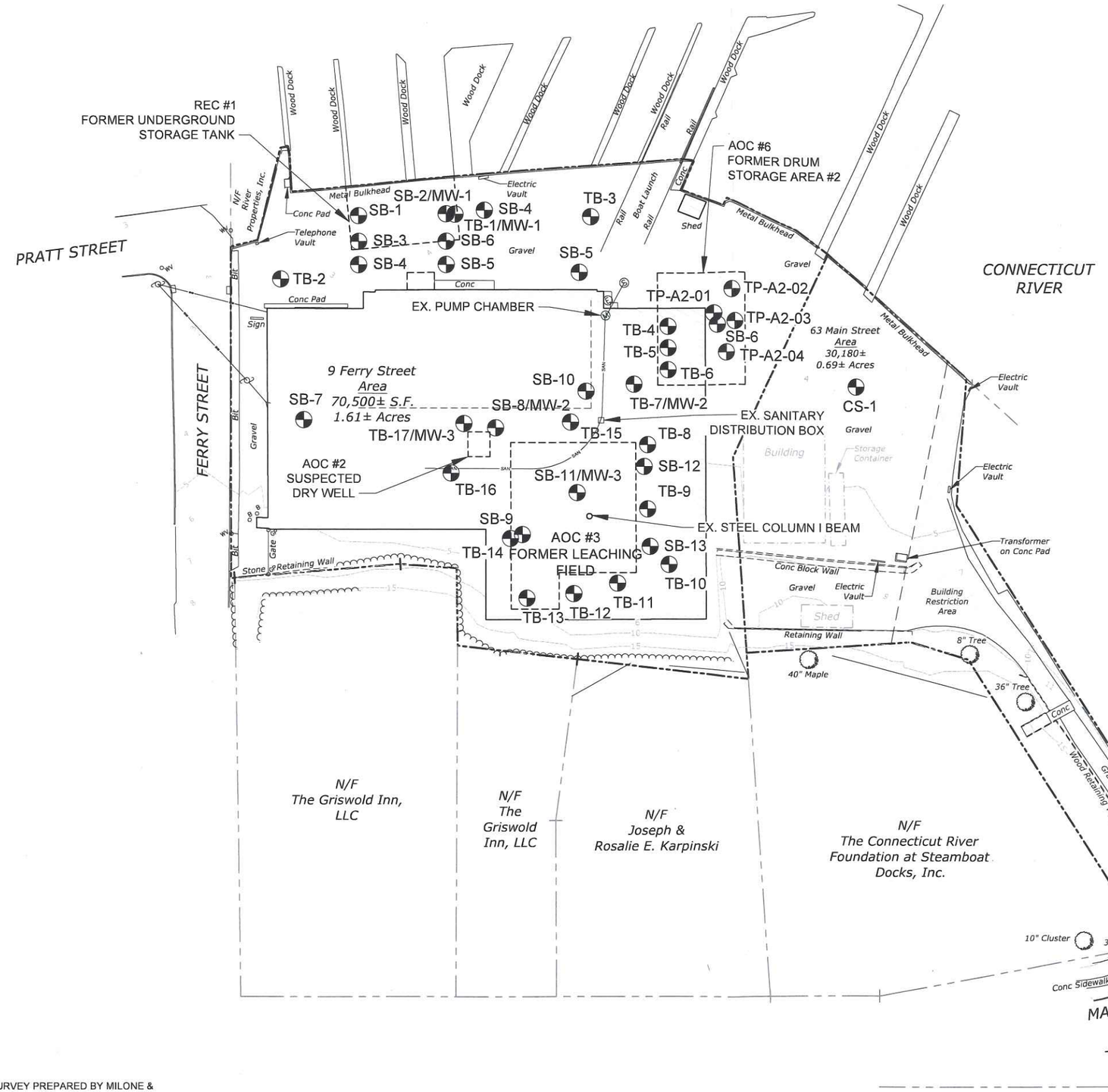
0	5/10/2021	FOR CONSTRUCTION	MJO

SHEET NAME

NOTES

SHEET NO.

B-2



LEGEND:

- .13
- EXISTING BUILDING
- FORMER BUILDING
- APPROXIMATE AREA OF REMEDIAL ACTIVITY
- TB-1/MW-1 — PHASE II/III SOIL BORING/MONITORING WELL
- SAN — EX. SANITARY LINE
- EX. SANITARY DISTRIBUTION BOX
- EX. INTERIOR WALL

0 30 60
SCALE: 1" = 30'

SOURCE:
PLAN BASED ON 2016 SURVEY PREPARED BY MILONE & MACBROOM, INC., PROVIDED BY CENTERBROOK ARCHITECTS & PLANNERS ON 8/15/2017.

FOR CONSTRUCTION

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ESSEX BOAT WORKS
9 FERRY STREET
ESSEX, CT

Essex Boat Works
9 Ferry Street
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Essex Boat Works
Essex, CT

STATE OF CONNECTICUT
MARC JOSEPH OUELLETTE
33566
LICENSED
PROFESSIONAL ENGINEER

P.E. No.:	33566
Approved:	MJO
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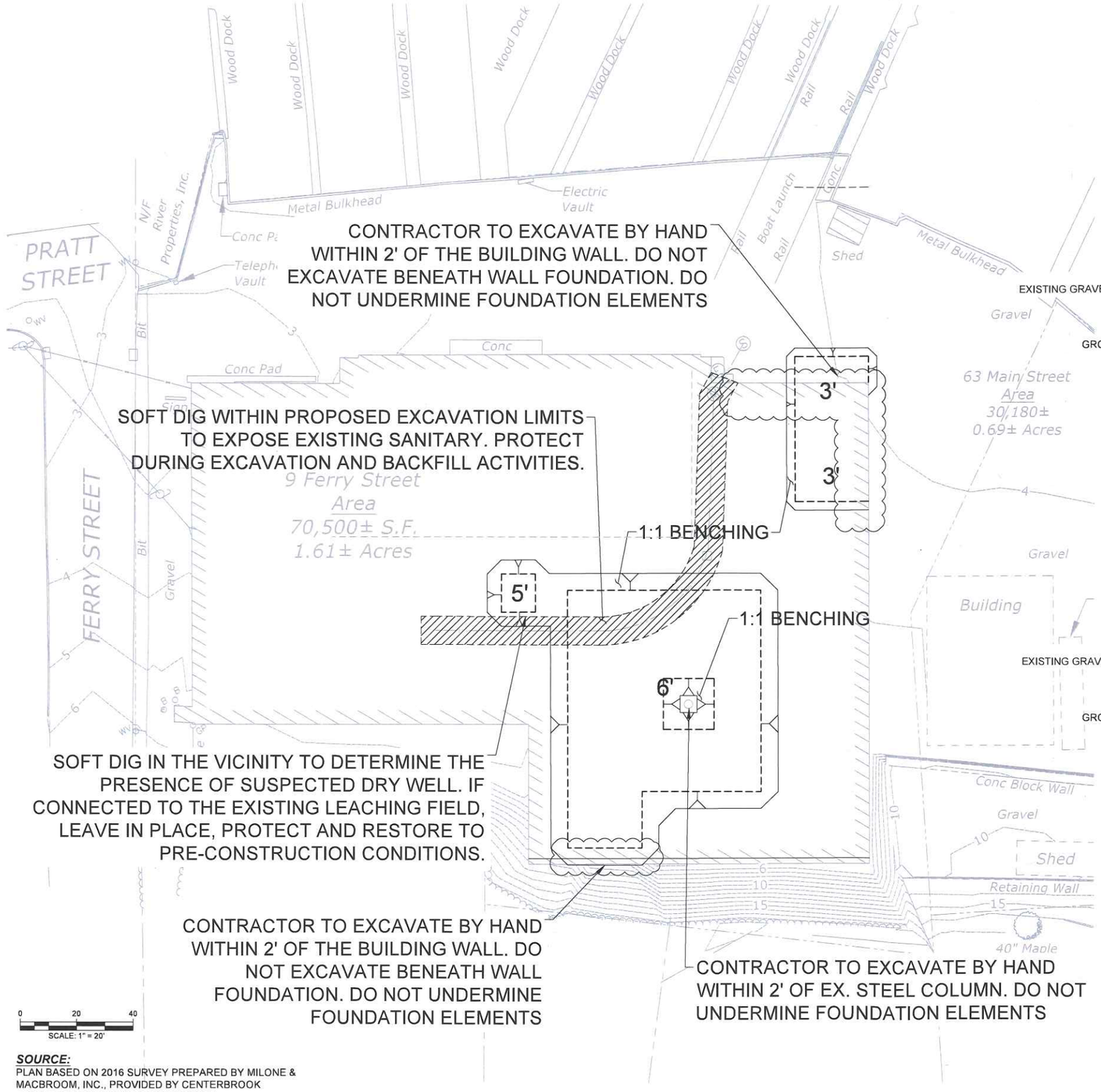
SHEET NAME

EXISTING CONDITIONS

SHEET NO.

B-3

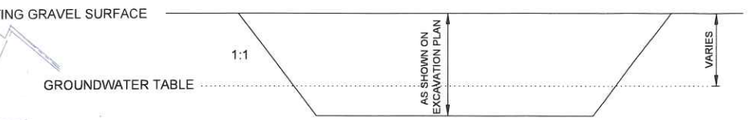


SOURCE:
PLAN BASED ON 2016 SURVEY PREPARED BY MILONE & MACBROOM, INC., PROVIDED BY CENTERBROOK ARCHITECTS & PLANNERS ON 8/15/2017.

LEGEND:

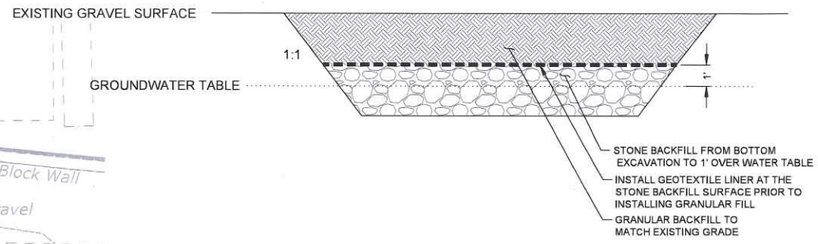
- PARCEL BOUNDARY
- BENCHING LIMIT
- EXISTING BUILDING
- FORMER BUILDING
- EXCAVATION LIMITS
- PROTECT
- 3' DEPTH OF EXCAVATION (FEET)
- EX. SANITARY LINE
- EX. SANITARY DISTRIBUTION BOX
- EX. INTERIOR WALL

EXCAVATION DETAIL
SCALE: NTS



NOTES:
1. PERFORM THE EXCAVATION WORK BELOW THE WATER TABLE IN THE WET. LINE TRUCK BEDS USED FOR TRANSPORTING SOILS TO THE DISPOSAL FACILITY.
2. GRAVITY DEWATER SATURATED SOILS WITHIN THE EXCAVATION FOOTPRINT, ON AN AS NEEDED BASIS. APPLY SOIL AMENDMENT PRODUCTS (CEMENT KILN DUST (CKD) OR OTHER APPROVED BY THE ENGINEER) ONLY FOR SOILS THAT ARE INHERENTLY TOO WET AND CANNOT BE DRIED SUFFICIENTLY FOR TRANSPORT OR ACCEPTANCE AT THE RECEIVING FACILITY USING OTHER TECHNIQUES.

BACKFILL DETAIL
SCALE: NTS



NOTES:
1. PERFORM THE EXCAVATION WORK BELOW THE WATER TABLE IN THE WET. LINE TRUCK BEDS USED FOR TRANSPORTING SOILS TO THE DISPOSAL FACILITY.
2. GRAVITY DEWATER SATURATED SOILS WITHIN THE EXCAVATION FOOTPRINT, ON AN AS NEEDED BASIS. APPLY SOIL AMENDMENT PRODUCTS (CEMENT KILN DUST (CKD) OR OTHER APPROVED BY THE ENGINEER) ONLY FOR SOILS THAT ARE INHERENTLY TOO WET AND CANNOT BE DRIED SUFFICIENTLY FOR TRANSPORT OR ACCEPTANCE AT THE RECEIVING FACILITY USING OTHER TECHNIQUES.

PROJECT AREA	PERCENT COMPACTION (%)	TEST FREQUENCY (PER LIFT OF MATERIAL)
LESS THAN 2 FEET BELOW FINISHED GRADE	95	50 FT BY 50 FT
GREATER THAN 2 FEET BELOW GRADE	92	50 FT BY 50 FT

FOR CONSTRUCTION

GEI Consultants
455 WINDING BROOK DRIVE
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(860)368-5300

ESSEX BOAT WORKS
9 FERRY STREET
ESSEX, CT

Essex Boat Works
9 Ferry Street
Essex, Connecticut

Essex Boat Works
Essex, CT

P.E. No.:	33566
Approved:	MJO
Checked:	MJO
Drawn:	JES
Designed:	EAS
GEI Project	2100855

Attention:
0 1"
If this scale bar does not measure 1" then drawing is not original scale.

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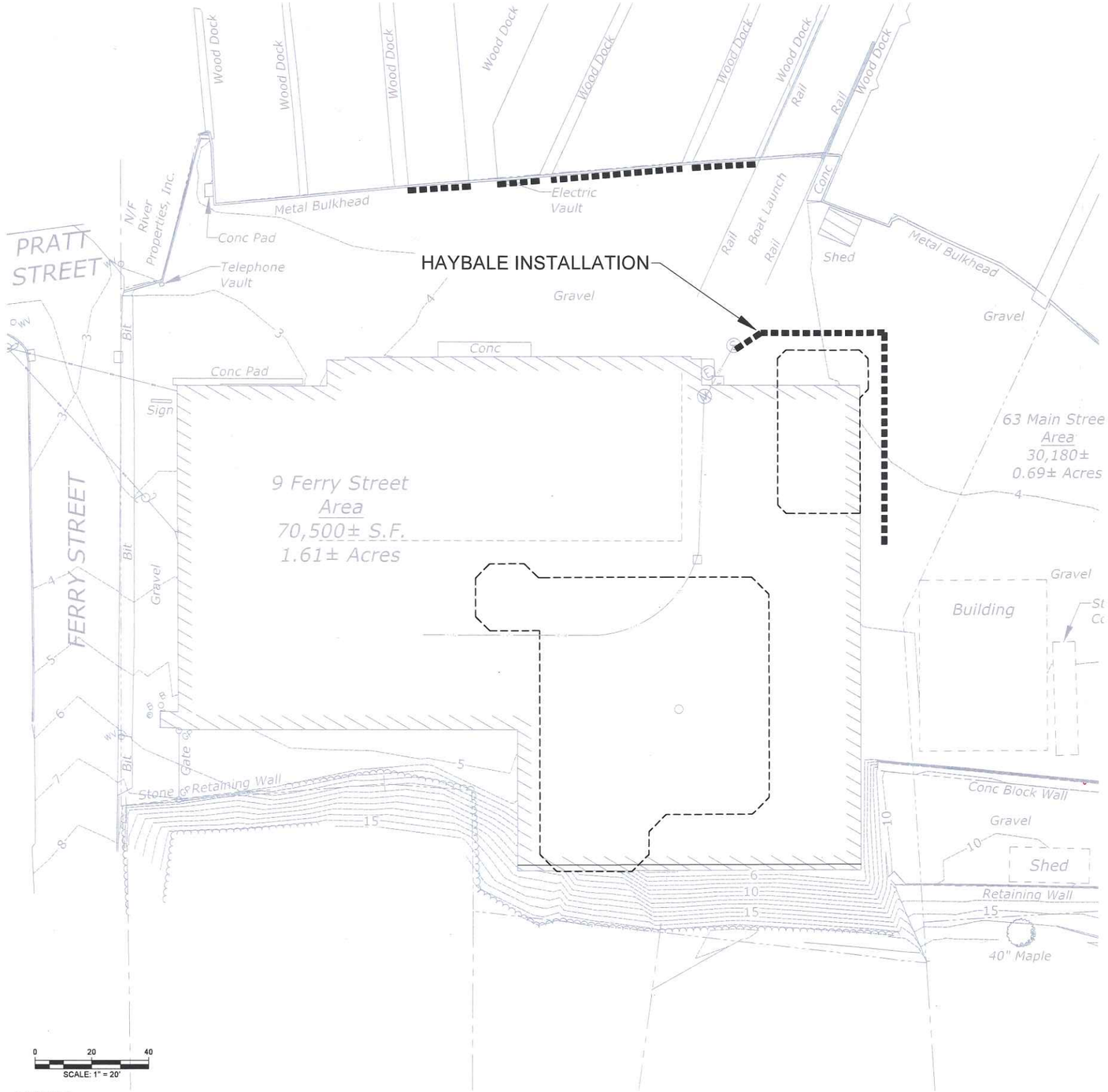
EXCAVATION PLAN

SHEET NO.

B-4

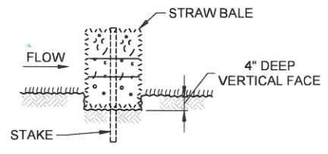


SOURCE:
PLAN BASED ON 2016 SURVEY PREPARED BY MILONE & MACBROOM, INC., PROVIDED BY CENTERBROOK ARCHITECTS & PLANNERS ON 8/15/2017.

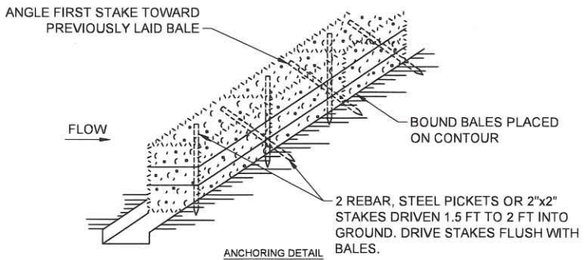
LEGEND:

- PARCEL BOUNDARY
- HAYBALE
- EXISTING BUILDING
- FORMER BUILDING
- APPROXIMATE AREA OF REMEDIAL ACTIVITY
- EX. SANITARY LINE
- EX. SANITARY DISTRIBUTION BOX
- EX. INTERIOR WALL

EROSION AND SEDIMENT CONTROL NOTES:
1. INSTALL HAY BALES IN THE SHOWN LAYOUT WHILE PERFORMING EXCAVATION, BACKFILL AND RESTORATION ACTIVITIES IN THE FORMER DRUM STORAGE AREA. HAY BALES MAY BE STATIONED ALONG BUILDING EXTERIOR DURING REMEDIAL ACTIVITIES IN THE FORMER LEACHING FIELD TO FACILITATE NORMAL SITE TRAFFIC.



BEDDING DETAIL



ANCHORING DETAIL

NOTES:
1. BALES SHALL BE PLACED AT THE TOP OF SLOPE OR ON THE CONTOUR AND IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.
2. EACH BALE SHALL BE EMBEDDED IN THE SOIL A MINIMUM OF 4", AND PLACED SO THAT BINDINGS ARE HORIZONTAL.
3. BALES SHALL BE SECURELY ANCHORED IN PLACE BY EITHER TWO STAKES OR REBAR DRIVEN THROUGH THE BALE. THE FIRST STAKE IN EACH BALE SHALL BE DRIVEN TOWARD THE PREVIOUSLY LAID BALE AT AN ANGLE TO FORCE THE BALES TOGETHER. STAKES SHALL BE DRIVEN FLUSH WITH THE BALE.
4. INSPECTION SHALL BE FREQUENT AND REPAIR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
5. BALES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

STRAW BALE BARRIER

SCALE: NTS

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STATE OF CONNECTICUT · ERIC J. SPAZIANI · 33566 · LICENSED PROFESSIONAL ENGINEER

P.E. No.:	33566
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Checked:	MJO
Drawn:	JES
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GEI Project	2100855

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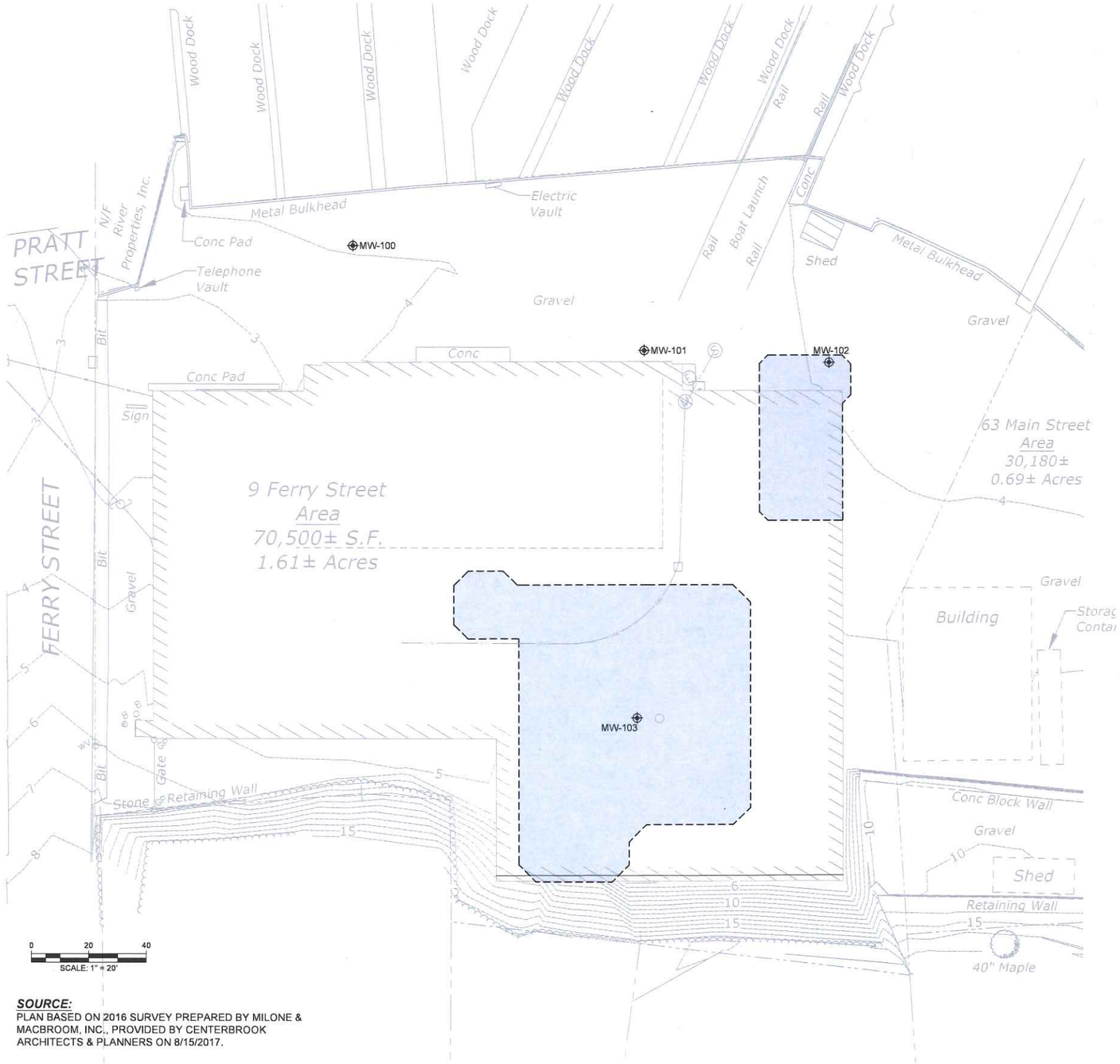
EROSION AND SEDIMENT CONTROL PLAN

SHEET NO.

B-5



LEGEND:

- PARCEL BOUNDARY
- EXISTING BUILDING
- FORMER BUILDING
- RESTORE GRAVEL SURFACE
- PROPOSED 2-INCH MONITORING WELL
- EX. SANITARY LINE
- EX. SANITARY DISTRIBUTION BOX
- EX. INTERIOR WALL

MONITORING WELL CONSTRUCTION NOTES:

1. PROPOSED MONITORING WELL LOCATIONS ARE CONCEPTUAL FINAL MONITORING WELL LOCATIONS WILL BE DETERMINED BASED ON FIELD OBSERVATIONS DURING THE WORK.
2. MONITORING WELLS WILL HAVE THE FOLLOWING CONSTRUCTION DETAILS:
   - SCREEN INTERVAL : 2'-12' BELOW GROUND SURFACE (BGS)
   - SAND PACK INTERVAL: 1'-12' BGS
   - BENTONITE CHIPS : 6" - 1' BGS
   - 2'X2' CONCRETE PAD
3. INSTALL RECESSED CONCRETE PAD AND MONITORING WELL MAN HOLE IN A MANNER THAT PROTECTS FROM SNOW CLEARING ACTIVITIES AT THE SITE.

SOURCE:
PLAN BASED ON 2016 SURVEY PREPARED BY MILONE & MACBROOM, INC., PROVIDED BY CENTERBROOK ARCHITECTS & PLANNERS ON 8/15/2017.

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STATE OF CONNECTION
JOSEPH C. SPAZIANI
LICENSE
PROFESSIONAL ENGINEER

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SHEET NAME

RESTORATION PLAN

SHEET NO.

B-6

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