Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Emplc

STATE OF CONNECTICUT Files #LIS-2017-3910-V, #LIS-2017-3928-V & #LIS-2018-3979-V

Issuance Date: August 18, 2020

v.

TOWN OF GUILFORD

CONSENT ORDER

A. The Commissioner of Energy & Environmental Protection ("the Commissioner") finds:

1. The Town of Guilford ("Respondent") is the owner of Chaffinch Island Road, Guilford, CT ("Property 1"), Old Quarry Road, Guilford, CT ("Property 2"), and Daniel Avenue, between Mulberry Point Road and Lower Road, Guilford, CT. ("Property 3"). Property 1 is located adjacent to the West River, Property 2 is located adjacent to Hoadley Creek, and Property 3 is located within Long Cove Marsh Creek. All properties are located within or adjacent to tidal, coastal and navigable waters of the State and contain tidal wetlands as defined by section 22a-29 of the Connecticut General Statutes ("CGS").

2. On or before October 21, 2017, without authorization, Respondent conducted work at Property 1 out of compliance with permit #201502262-KR issued on April 28, 2015 as follows: a) violated SPECIAL TERMS AND CONDITIONS paragraph #10 by placing rock fill beyond the pre-work footprint of the existing stone and boulders located along the edges of both sides of the roadway; b) violated SPECIAL TERMS AND CONDITIONS paragraph #11 by placing silt fence within tidal wetlands on both sides of the roadway which has not been removed upon completion of the work at the site; c) submitted as-built drawings received on November 25, 2015 from Mark Damiani, Assistant Town Engineer which do not accurately show the work completed at the site as identified by the Department during the September 12, 2017 site inspection in violation of GENERAL TERMS AND CONDITIONS paragraph #12 requiring that any document submitted is true, accurate, and complete; and d) constructed stone embankments to approximately elevation 10.0' NAVD 88 instead of the authorized elevation 8.0' NAVD

88 resulting in: additional waterward encroachments an average 9.3' greater on the southern side of the roadway and an average 9.8' greater on the northern side of the roadway; and approximately 12,240 square feet of tidal wetlands impact beyond the 5,690 square feet of impact authorized by the permit.

3. On or before October 13, 2017, without authorization, Respondent conducted work at Property 2 out of compliance with permit #201206784-KR issued on November 25, 2013 as follows: a) violated SPECIAL TERMS AND CONDITIONS paragraph #7 by placing riprap fill to a width of 9' to 10' on each side of the roadway, which exceeded the permitted side-slope footprint of approximately 4' to 5' resulting in approximately 4,800 square feet of tidal wetlands impact beyond the 15,300 square feet of impact authorized by the permit; b) violated SPECIAL TERMS AND CONDITIONS paragraph #9 by placing silt fence within tidal wetlands on both sides of the roadway which has not been removed upon completion of the work at the site; and c) submitted as-built drawings received on October 29, 2014 from Mark Damiani, Assistant Town Engineer which do not accurately show the work which has been completed at the site as identified by the Department during the September 12, 2017 and October 13, 2017 site inspections in violation of GENERAL TERMS AND CONDITIONS paragraph #12 requiring that any document submitted is true, accurate, and complete.

4. On or before June 8, 2018, without authorization, Respondent conducted work a Property 3 out of compliance with permit #200301820-SB issued on May 2, 2012 as follows: a) placed large stone boulders over an approximately 15' wide x 30' long area along both sides of the Long Cove Marsh Creek banks immediately north of the Daniel Avenue culvert crossing; and b) placed trap rock just upstream of the stone boulders described above, including an approximately 20' to 30' wide x 130' long area of trap rock along the western side of Long Cove Marsh Creek on property owned by Rhodes Family, LLC and an approximately 10' wide x 25' long area along the eastern side of Long Cove Marsh Creek on property owned Harvey L. Jr. Anderson & John B. Wilcox.

5. The Respondent submitted a corrected set of as-built plans for Property 1 on January 3, 2018 and for Property 2 on February 14, 2018, both prepared by a Connecticut licensed land surveyor, in accordance with the requirements of a Notice of Violation that show the conditions described in finding A.2. and A.3., above.

6. On October 10, 2017, the Department issued Consent Order #LIS-2016-3836-V to the Town of Guilford to resolve non-compliance with Structures, Dredging & Fill and Tidal Wetland Permit #201503795-SJ, which authorized similar roadway improvements to Tuttles Point Road. In compliance with the Consent Order, the Town of Guilford had paid the civil penalty and submitted the permit application to retain unauthorized impacts to tidal wetlands.

7. The Respondent has not received a lawful coastal site plan approval from the Town of Guilford for the installation of the trap rock described in paragraph A.4., above, pursuant to sections 22a-105, 22a-106, and 22a-109 of the CGS.

8. The installation of the trap rock has described in paragraph A.4., above, resulted in the creation of a public nuisance pursuant to section 22a-108 of the General Statutes.

9. Respondent did not receive a certificate or permit from the Commissioner under sections 22a-361 and 22a-32 CGS for the work described in paragraphs A.2., A.3., and A.4 at the sites.

10. The work described in paragraphs A.2, A3, and A.4., has been conducted waterward of the Coastal Jurisdiction Line (CJL) and within tidal wetlands without receiving a certificate or permit from the Commissioner pursuant to sections 22a-361 and 22a-32 of the CGS.

11. By virtue of the above, Respondent has violated sections 22a-361 and 22a-32 of the CGS.

B. With the agreement of the Respondent, the Commissioner, acting under CGS sections 22a-6, 22a-32, and 22a-361 orders Respondent as follows:

1. <u>Permit Application Submissions and Decisions and Permit Mitigation</u>.

   a. Upon issuance of a Notice of Tentative Determination on each of the following permit applications #201711200 submitted on December 22, 2017 for Tuttles Point Road, #201801614 submitted on February 16, 2018 for Chaffinch Island Road, #201803036 submitted on March 9, 2018 for Old Quarry Road, and #201904215 submitted on March 18, 2019 for Daniel Avenue (collectively the "Permit Applications"), the Respondent shall compare the proposed permits that accompany the Notices of Tentative Determination (Proposed Permits) to the draft permits that are attached to this Order (Draft Permits). If the Proposed Permits conform to the Draft Permits, Respondent shall comply with the Proposed Permits as issued; provided, however, that Respondent shall retain all rights under applicable law and regulation to contest, dispute, or otherwise challenge any term of any Proposed Permit that differs from the corresponding Draft Permit, whether such difference consists of modification, addition or deletion of terms. The Respondent shall pay four times the permit application fee as calculated by the Commissioner for requesting to retain work completed after 1995 in accordance with CGS section 22a-361(a)(2) in order for the Commissioner to complete final technical review of the Permit Applications.

b. The Respondent shall perform tidal wetlands mitigation in the West River marsh west of Seaside Avenue as described in the report entitled "West River Tidal Wetland Mitigation, West River Estuary, Guilford, Connecticut" dated September 20, 2019 and prepared by Milone & MacBroom, inc. and the letter dated August 20, 2019 from Roger Wolfe, DEEP, to Megan Raymond in "Attachment A" to provide for mitigation deemed sufficient by the Commissioner to off-set the total of 1 acre of tidal wetlands impacts incurred as a result of elevating the roadways of Tuttles Point Road, Chaffinch Island Road, and Old Quarry Road; and armoring Long Cove Creek in the vicinity of Daniel Avenue. The mitigation project will include existing conditions survey, permitting, construction, post construction survey and 5 years of maintenance and monitoring

2. No Additional Work. Respondent shall not conduct any work waterward of the coastal jurisdiction line or in tidal wetlands at the site without prior written authorization of the Commissioner in accordance with CGS sections 22a-361 and 22a-32.

3. Full compliance. Respondent shall not be considered in full compliance with this Consent Order until all actions required by this Consent Order have been completed as approved and to the satisfaction of the Commissioner.

4. Supplemental Environmental Project.

a. The Respondent shall fund a supplemental environmental project ("SEP") or projects as selected by the Department. Therefore, on or before thirty (30) days after the date of issuance of this Consent Order, the Respondent shall pay Fifteen Thousand Dollars ($15,000) to the State-Wide SEP Account. The payment shall be mailed or personally delivered to the Department of Energy and Environmental Protection, Bureau of Financial and Support Services, Accounts Receivable Office, 79 Elm Street, Hartford, Connecticut 06106-5127, and shall be by certified or bank check payable to the "Treasurer, State of Connecticut," with notation thereon "State-Wide SEP Account" and "Consent Order No. LIS-2017-3910/3928/LIS-2018-3979-V."

b. If the Respondent fails to fund the SEP in accordance with paragraph 4.a. above, the Respondent shall immediately pay a civil penalty of $15,500 in addition to the civil penalty required to be paid by paragraph B.5. Respondent shall pay such civil penalty in accordance with the provisions of paragraph B.6., below, of this Consent Order.

c. The Respondent shall not claim or represent that any SEP payment made pursuant to this Consent Order constitutes an ordinary business expense or charitable contribution or any other type of tax deductible expense, and the Respondent shall not seek or obtain any other tax benefit such as a tax credit as a result of the payment under this paragraph.

d. If and when the Respondent disseminates any publicity, including but not limited to any press releases regarding funding a SEP, the Respondent shall include a statement that such funding is in partial settlement of an enforcement action brought by the Commissioner.

5. Penalty for past violations. On or before 30 days after issuance of this Consent Order, the Respondent shall pay a civil penalty of Twenty Thousand Dollars ($20,000) as the total civil penalty to be sought by the Commissioner for the violations alleged in this Consent Order, unless the additional $15,500 civil penalty for failure to complete the SEP becomes due in accordance with paragraph B.4.b., above.

6. Payment of penalties. Payment of penalties under this Consent Order shall be mailed or personally delivered to the "Connecticut Department of Energy & Environmental Protection," Financial Management Office, 79 Elm Street, Hartford, CT 06106-5127, and shall be by certified or bank check payable to the Connecticut Department of Energy & Environmental Protection. The check shall state on its face, "Land and Water Resources Division," Consent Order Nos. LIS-2017-3910/3928/LIS-2018-3979-V."

7. Approvals. Respondent shall use best efforts to submit to the Commissioner all documents required by this Consent Order in a complete and approvable form. If the Commissioner notifies the Respondent that any document or other action is deficient, and does not approve it with conditions or modifications, it is deemed disapproved, and Respondent shall correct the deficiencies and resubmit it within the time specified by the Commissioner or, if no time is specified by the Commissioner, within thirty days of the Commissioner's notice of deficiencies. In approving any document or other action under this Consent Order, the Commissioner may approve the document or other action as submitted or performed or with such conditions or modifications as the Commissioner deems necessary to carry out the purposes of this Consent Order. Nothing in this paragraph shall excuse noncompliance or delay.

8. Definitions. As used in this Consent Order, "Commissioner" means the Commissioner of Energy & Environmental Protection or an agent of the Commissioner. The date of "issuance" of this Consent Order is the date the Order is deposited in the mail or personally delivered to the Respondent, whichever is earlier.

9. Dates. The date of submission to the Commissioner of any document required by this Consent Order shall be the date such document is received by the Commissioner. The date of any notice by the Commissioner under this Consent Order, including but not limited to notice of approval or disapproval of any document or other action, shall be the date such notice is personally delivered or the date three days after it is mailed by the Commissioner, whichever is earlier. Except as otherwise specified in this Consent Order,

the word "day" as used in this Order means calendar day. Any document or action which is required by this Order to be submitted or performed by a date which falls on a Saturday, Sunday or a Connecticut or federal legal holiday shall be submitted or performed on or before the next day which is not a Saturday, Sunday, or Connecticut or federal holiday.

10. Notification of noncompliance. In the event that Respondent becomes aware that they did not or may not comply, or did not or may not comply on time, with any requirement of this Consent Order or of any document required hereunder, Respondent shall immediately notify the Commissioner and shall take all reasonable steps to ensure that any noncompliance or delay is avoided or, if unavoidable, is minimized to the greatest extent possible. In so notifying the Commissioner, Respondent shall state in writing the reasons for the noncompliance or delay and propose, for the review and written approval of the Commissioner, dates by which compliance will be achieved, and Respondent shall comply with any dates which may be approved in writing by the Commissioner. Notification by Respondent shall not excuse noncompliance or delay. The Commissioner's approval of any revised compliance dates shall not excuse noncompliance or delay unless specifically so stated by the Commissioner in writing.

11. Certification of documents. Any document, including but not limited to any notice, which is required to be submitted to the Commissioner under this Consent Order shall be signed by a duly authorized representative of the Respondent and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows: "I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that any false statement made in the submitted information may be punishable as a criminal offense in accordance with CGS Section 22a-6, under CGS Section 53a-157b and in accordance with any other applicable statute."

12. Noncompliance. This Consent Order is a final order of the Commissioner with respect to the matters addressed herein, and is nonappealable and immediately enforceable. Failure to comply with this Consent Order may subject Respondents to an injunction and penalties under Chapters 439, and 446i of the General Statutes.

13. False statements. Any false statement in any information submitted pursuant to this Consent Order may be punishable as a criminal offense in accordance with CGS section 22a-6, under CGS section 53a-157b.

14. Notice of transfer; liability of Respondent and others. Until Respondent has fully

complied with this Consent Order, Respondent shall notify the Commissioner in writing no later than fifteen days after transferring all or any portion of the site, structures, obstructions, encroachments, fill, operations or facilities which are the subject of this Consent Order, or obtaining a new mailing or location address. Respondents' obligations under this Consent Order shall not be affected by the passage of title to the site to any other person or municipality. A future owner of the site may be subject to the issuance of an Order from the Commissioner.

15. Commissioner's powers. Nothing in this Consent Order shall affect the Commissioner's authority to institute any proceeding or take any action to prevent or abate violations of law, prevent or abate pollution, recover costs and damages for adverse impacts to natural resources and to impose penalties for violations of law, including but not limited to violations of any permit issued by the Commissioner. If at any time the Commissioner determines that the actions taken by Respondent pursuant to this Consent Order have not successfully corrected all violations, the Commissioner may institute any proceeding to require Respondent to undertake further investigation or further action to correct violations.

16. Respondent's obligations under law. Nothing in this Consent Order shall relieve Respondent of other obligations under applicable federal, state and local law.

17. No assurance by Commissioner. No provision of this Consent Order or inaction by the Commissioner shall be construed to constitute an assurance by the Commissioner that the corrective actions taken by Respondent pursuant to this Order will result in compliance with regard to any statute, regulation, permit, order or other authorization not identified hereunder.

18. Access to site. Any representative of the Department of Energy & Environmental Protection may enter the site without prior notice for the purposes of monitoring and enforcing the actions required or allowed by this Consent Order.

19. No effect on rights of other persons. This Consent Order shall neither create nor affect any rights of persons who or municipalities which are not parties to this Consent Order.

20. Notice to Commissioner of changes. Within fifteen days of the date Respondent become aware of a change in any information submitted to the Commissioner under this Consent Order, or that any such information was inaccurate or misleading or that any relevant information was omitted, Respondent shall submit the correct or omitted information to the Commissioner.

21. Submission of documents. Any document required to be submitted to the Commissioner under this Consent Order or any contact required to be made with the Commissioner

shall, unless otherwise specified in writing by the Commissioner, be directed to:

Kevin Zawoy
Department of Energy & Environmental Protection
Land & Water Resources Division
79 Elm Street
Hartford, CT 06106-5127
(860) 424-3626
Fax # (860) 424-4054

Respondent consents to the issuance of this Consent Order without further notice.

Town of Guilford, First Selectman
Matthew T. Hoey III

July 27, 2020
Date

Issued as a final order of the Commissioner of Energy & Environmental Protection on

August 18, 2020.

Betsey Wingfield
Deputy Commissioner

Connecticut Department of
ENERGY &
ENVIRONMENTAL
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Certification of Mailing

On 8/19, 2019, 20 at 10:00 a.m./p.m., I mailed a certified copy of Consent Order No. LIS-2017-3910/3928/LIS-2018-3979 to the following, by placing it in the U.S. mail/interdepartmental mail:

Town of Guilford
First Selectman, Matthew T. Hoey III
50 Boston Street
Guilford, CT 06437

Kilynn Grzywinski
Name of person mailing

Title: Admasst

Date: 8/19/2020

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Draft

Bureau of Water Protection and Land Reuse
Land & Water Resources Division

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

DRAFT

Connecticut Department of Energy and Environmental Protection License*

Structures, Dredging & Fill and Tidal Wetlands Permit
Section 401 Water Quality Certification

Licensee(s):	Town of Guilford
Licensee Address(s):	50 Boston Street Guilford, CT 06437
License Number(s):	201711200-SDFTWQ, 201801614-SDFTWQ, 201803036 – SDFTWQ, 201904215-SDFTWQ
Municipality:	Guilford
Project Description:	Post-construction authorization of tidal wetland and watercourse impacts associated with the reconstruction of Tuttles Point Road, Chaffinch Island Road and Old Quarry Road and bank stabilization of Long Cove Creek for municipal infrastructure improvement. Tidal Wetland Mitigation Plan Modification to offset impacts associated with Permits #201206784-KR, #201502262KR and 201503795-SJ.
Project Address/Location:	Tuttles Point Road between Marshall Avenue to White Top Lane Chaffinch Island Road between street address #311 to #348 Old Quarry Road from Andrews Road to its cul-dc-sac Long Cove Creek, immediately north of Daniel Avenue crossing
Waters:	Tidal Wetlands and Long Cove Creek
Authorizing CT Statute(s) and/or Federal Law:	CGS Section 22a-28 to 35; CGS Section 22a-90 to 112; CGS Section 22a-359 to 363g; Section 401 CWA (33 USC 1341)
Applicable Regulations of CT State Agencies:	22a-30-1 to 17, 22a-426-1 to 9
Agency Contact:	Land & Water Resources Division, Bureau of Water Protection & Land Reuse, 860-424-3019

*Connecticut's Uniform Administrative Procedure Act defines License to include, "*the whole or part of any agency permit, certificate, approval, registration, charter or similar form of permission required by law . . .*"

License Expiration: On the date of issuance of this license for all roadway reconstruction and channel stabilization activities retained herein.

Five (5) years from the date of issuance of this license for the tidal wetland mitigation activities.

Project Site Plan Set: Site Plans entitled:

"Tuttles Point Road Reconstruction, Guilford, Connecticut", Sheets 1 of 6, prepared by Town of Guilford Engineering Department, dated November 2017.

"As-Built Plan – Profile of a Portion of Chaffinch Island Road, Guilford, Connecticut", Sheets 1 of 8, prepared by Todd K. Anderson L.S., dated December 27, 2017.

"As-Built Plan – Profile of a Portion of Old Quarry Road, Guilford, Connecticut", Sheets 1 of 18, prepared by Todd K. Anderson L.S., dated February 6, 2018.

"Daniel Avenue Permitting, 69 Daniel Avenue, Guilford, Connecticut", Figures 1 of 3, prepared by Milone & MacBroom, dated February 14, 2019.

"West River Tidal Wetland Mitigation, West River Estuary, Guilford, Connecticut", 18 Pages, prepared by Milone & MacBroom, dated September 20, 2019.

License Enclosures: LWRD General Conditions, Land Record Filing, Work Commencement Form, Compliance Certification Form, Site Plan Set

Authorized Activities:

The Licensee is hereby authorized to retain the following work as described in applications # 201711200, #201801614, #201803036 and #201904215 and as depicted on any site plan sheets / sets cited herein:

For Tuttles Point Road between Marshall Avenue to White Top Lane:

1. Retain approximately 400 linear feet of reconstructed and elevated roadway, including:
    a. Paved road width of approximately 18' and a top elevation of approximately 8.0' NAVD88;
    b. A 40' long, 36" diameter plastic, cross culvert, with an invert elevation at 2.0' NAVD88;
    c. 300 cubic yards of stone revetment placed on both the north a south roadway embankments; and

d. A total of 5,695 square feet of permanent fill within tidal wetlands, of which 1,488 square feet was authorized under Permit #201503795-SJ.

For Chaffinch Island Road between street address #311 to #348:

2. Retain approximately 600 linear feet of reconstructed and elevated roadway, including:
   a. Paved road width of approximately 22' and a top elevation of approximately 8.0' NAVD88;
   b. A 40' long, 24" diameter plastic, cross culvert, with an invert elevation at -3.8' NAVD88;
   c. 1,000 cubic yards of stone revetment placed on both the north a south roadway embankments, with a top elevation of 10.0' NAVD88; and
   d. A total of 8,874 square feet of permanent fill within tidal wetlands, of which 3,900 square feet was authorized under Permit #201502262-KR.

For Old Quarry Road from Andrews Road to its cul-de-sac

3. Retain approximately 1,900 linear feet of reconstructed and elevated roadway, including:
   a. Paved road width of approximately 22' and a top elevation of approximately 6.0' NAVD88;
   b. 40' long, 24" diameter plastic, cross culvert, with an invert elevation at 2.4' NAVD88;
   c. 40' long, 48" diameter plastic, cross culvert, with an invert elevation at 0.2' NAVD88;
   d. 700 cubic yards of stone revetment placed on both the north a south roadway embankments; and
   e. A total of 20,100 square feet of permanent fill within tidal wetlands, of which 15,300 square feet was authorized under Permit #201206784-KR.

For Long Cove Creek immediately north of Daniel Avenue crossing

4. Retain approximately 81 cubic yards of modified rip rap (3" – 9" diameter) and large cobbles/boulders installed in response to storm damage from Hurricane Sandy, below the coastal jurisdiction line, along approximately 150 linear of the western bank of the creek and approximately 60 linear of the eastern creek bank.

For West River Tidal Mitigation Site, south of New Whitfield Street and west of Seaside Avenue

5. To offset the total cumulative impact of 38,540 square feet to tidal wetlands from the three completed roadway reconstruction projects at Tuttles Point Road, Chaffinch Island Road and Old Quarry Road, conduct the following activities:
   a. Restore approximately 0.5 acres of existing lawn to tidal wetlands;
   b. Restore approximately 5,117 linear feet of 2' wide (0.23 acres) tidal creek system;
   c. Restore approximately 7.46 acres of tidal marsh by the eradication of Common reed (Phragmites australis); and
   d. Monitor, maintain and repair, as needed, the cumulative tidal wetland restoration area of 8.19 acres.

The tidal wetland mitigation activities authorized herein will supersede and replace the tidal wetland mitigation conditions authorized under Permits #201206784-KR, #201502262-KR and #201503795-SJ.

Failure to comply with the terms and conditions of this license shall subject the Licensee and / or the Licensee's contractor(s) to enforcement actions and penalties as provided by law.

This license is subject to the following Terms and Conditions:

1. **License Enclosure(s) and Conditions.** The Licensee shall comply with all applicable terms and conditions as may be stipulated within the License Enclosure(s) listed above.
2. The Licensee shall conduct the tidal wetland mitigation plan activities in accordance with the plan entitled "West River Tidal Wetland Mitigation, West River Estuary, Guilford, Connecticut" dated September 20, 2019 and prepared by Milone & MacBroom, Inc. Specifically, the Licensee shall specifically follow the actions and timeframes detailed in 8.0 Mitigation Work Plan, 9.0 Maintenance Plan, 10.0 Performance Standards, 11.0 Monitoring Requirements, 12.0 Long-Term Management Plan and 13.0 Adaptive Management Plan.
3. If the Licensee fails to perform the actions detailed in the tidal wetland mitigation plan to the Commissioner's satisfaction, the Department may require the Licensee to conduct additional tidal wetland mitigation actions at the existing approved site and/or at another site subject to the Commissioner's approval.

Issued under the authority of the Commissioner of Energy and Environmental Protection on:

_____
Date

_____
Betsey Wingfield
Deputy Commissioner
Department of Energy & Environmental Protection

West River Tidal Wetland Mitigation

West River Estuary
Guilford, Connecticut
September 20, 2019

Prepared for:
Town of Guilford
50 Boston Street
Guilford, Connecticut 06437

MMI #2426-28-01

Prepared by:
MILONE & MACBROOM, INC.
195 Church Street, 7th Floor
New Haven, Connecticut 06510
(203) 344-7887
www.mminc.com

MILONE & MACBROOM

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1.0 INTRODUCTION

The Town of Guilford proposes to conduct permittee-responsible mitigation (PRM) for impacts on tidal wetlands that occurred within jurisdictional areas of the Connecticut Department of Energy & Environmental Protection (CT DEEP) and the United States Army Corps of Engineers (USACE) during the course of maintenance of town infrastructure. Each of the subject projects was necessary in order to preserve and protect access ways to homes and businesses within the town. Specifically, work was permitted and completed on Old Quarry Road, Tuttles Point Road, and Chaffinch Island Road to elevate existing roadways that cross tidal creeks on the Guilford shoreline. Mitigation is being provided for both permitted and unauthorized encroachments on tidal wetlands. Encroachments beyond the permitted limits occurred during construction of each of the projects due to encountered field conditions. In total, direct disturbance of 38,540 square feet of tidal wetlands occurred as a result of these activities.

Mitigation for direct wetland disturbances is a typical requirement of state and federal permitting. Mitigation allows an opportunity for a project to offset unavoidable impacts on aquatic resources with substantive, measurable ecological improvements, ideally elsewhere in the watershed. The proposed mitigation project is designed to offset the loss of aquatic resources with measurable and enforceable ecologic performance standards associated with tidal wetland rehabilitation. The proposed project is consistent with the watershed approach through selecting a mitigation site in close proximity to the areas of impact. Additionally, the project involves in-kind mitigation, focusing on rehabilitation of the same wetland class, tidal wetlands as were unavoidably impacted by the town projects. Compensatory mitigation will be achieved through a combination of the four recognized methods of mitigation (40 CFR Part 320): restoration, enhancement, establishment, and preservation.

The Town of Guilford is committed to achieving successful mitigation and has developed a prescriptive approach described in the following narrative. The mitigation project and follow-up monitoring will be implemented by CT DEEP. This particular project has high ecological value, as well as high visibility, as the site lies adjacent to the New England Trail. The use of permittee-responsible in-kind mitigation as opposed to an in-lieu fee (ILF) approach is desirable given the town's commitment to replacing lost aquatic functions resulting from the roadway projects with those of equal functionality within a reasonable temporal and spatial scale.

2.0 PROJECT BACKGROUND

Mitigation is necessary to compensate for unavoidable direct impact on tidal wetlands that occurred during the course of road elevation projects on three town-owned roads (Table 1). PRM will be provided for permitted and unauthorized impacts. Tidal wetlands that were affected by the road projects were primarily portions of high marsh platforms though some common reed (*Phragmites australis*) edge was impaired, as well as low marsh areas adjacent to culvert crossings. Total tidal wetland impacts measure 38,540 square feet or 0.88 acre. Work was conducted in 2014 and 2015.

TABLE 1
Tidal Wetland Impacts, Permitted and Unauthorized

Site Locus	Total Impact Area (ft^2)	Permitted Area (ft^2)	Area in Excess of Permit Area
Chaffinch Island Road – West River	12,240	6,550	5,690
Old Quarry Road – Hoadley Creek	20,100	15,300	4,800
Tuttle's Point Road – Guilford Harbor	6,200	1,488	4,712
Total	**38,540**	**23,338**	**15,202**

(ft^2)= Square Feet

3.0 OBJECTIVES

The objective of the proposed mitigation project is to restore and enhance the existing ecological value of tidal wetlands at the mouth of the West River. Specifically, the project re-establishes tidal wetlands within existing lawn areas, fosters hydrologic conveyance within the marsh complex by removing accumulated sediment in tidal creeks, and concurrently addresses common reed monoculture through mechanical and chemical means. The proposed PRM project will be more ecologically appropriate than an ILF program as there is demonstrated degradation of this area. Further, the project would benefit the local watershed through in-kind creation and rehabilitation of tidal wetlands in close proximity to the impacted areas. The project has a high likelihood for success by focusing on hydrologic improvement, as well as a multitude of mitigation methods, namely restoration – through removal of non-native vegetation, re-establishment – through creation of tidal wetlands, enhancement – through introduction of habitat features, and preservation – through the application of conservation easements and long-term protections. The proposed project is also measurable and thus provides the means for accountability. In total, 8.19 acres of marsh will be enhanced, re-established, preserved, or rehabilitated through this project.

TABLE 2
Proposed West River Mitigation Instruments

Mitigation Instrument	Re-establishment	Rehabilitation	Preservation	Total (acres)
Tidal creek conveyance		0.23 acre (5,117 feet * 2-feet wide)	0.23 acres	0.23
Common reed treatment		7.46 acres	7.46 acres	7.46
Tidal wetland creation	0.50 acre		0.50 acres	0.50
Total (acres)	**0.5**	**7.69**	**8.19**	**8.19**

Restoration of this coastal wetland system will be achieved primarily through recontouring and maintenance of tidal creeks and concurrent eradication of common reed (*Phragmites australis*). The goals of these activities are restoration of habitat structure and diversity and natural exchange of tidal waters. Dominance of common reed has resulted in an almost threefold decrease in plant species richness in New England salt marshes (Silliman and Bertness, 2004). Such changes to habitat structure create an environment that supports significantly fewer species of birds and state-listed species in Connecticut (Benoit and Askins, 1999). Eradication of common reed, which forms dense monocultures in disturbed ecosystems, will enhance wildlife habitat by restoring structural diversity in these marshes. Restoration of tidal flow within these wetlands will in turn help control the invasive common reed populations as increased salinity and flooding are known to reduce common reed biomass and density (Hellings and Gallagher, 1992).

4.0 SITE SELECTION

The Town of Guilford evaluated a number of projects and properties in selecting this particular project to advance. Prior state and federal permits stipulated the replacement of the Leetes Island marsh culvert at Shell Beach Road as mitigation for road elevation projects. Challenges were presented relative to the Leetes Island tide gate's consistency with federal mitigation requirements related to funding mechanisms, ownership and long-term management, ecological success and long-term sustainability, and duplication of mitigation credits. To this end, Leetes Island tide gate was eliminated as a candidate for mitigation, and other opportunities were pursued.

In advancing the proposed project, site suitability analysis relied on the site's inherent ecological consistency with the directly impacted wetlands. These features consist of the following:

- Hydrologic condition, soil characteristics, and physical/chemical characteristics
- Watershed-scale features, aquatic habitat diversity, habitat connectivity, and landscape scale functions
- Size and location of mitigation site relative to hydrologic sources and ecological features
- Compatibility with adjacent land use and watershed management plans
- Effects on aquatic or terrestrial resources, threatened and endangered species habitat, etc.
- Similarity to impacted resource type (hydrogeomorphic class)
- Long-term sustainability without maintenance through hydrologic improvements

5.0 SITE PROTECTION INSTRUMENT

The Town of Guilford will ensure the proposed mitigation project is adequately protected through conservation easements or deed restrictions. Proposed conservation easements will be held by a third party, who will be determined. The majority of the proposed mitigation project is located on town land with a few privately owned parcels at the northern portion of the mitigation site. Agreements will be established with private individuals to ensure consistency with site protection mandates.

Compensatory mitigation sites and remaining on-site aquatic resources are to be set aside for conservation and shall be protected in perpetuity from future development. Within 120 days of the approved mitigation plan, the permittee shall submit to the USACE a draft of the conservation

easement or deed restriction. Within 30 days of the date the USACE approves this draft document in writing, the permittee shall execute and record it with the Registry of Deeds for the Town of Guilford and the State of Connecticut. A copy of the executed and recorded document must then be sent to the USACE within 120 days of the date the USACE approves it. The conservation easement or deed restriction shall protect the site or sites in perpetuity from any future development. For preservation as part of compensation, the conservation easement or deed restriction shall expressly allow for the creation, restoration, remediation, and monitoring activities required by this project on the site or sites. It shall prohibit all other filling, clearing, and other disturbances (including vehicle access) on these sites except for activities explicitly authorized by the USACE in these approved documents.

6.0 BASELINE INFORMATION

6.1 Project Site

The mitigation site spans several parcels, the majority of which are town owned, totaling approximately 76 acres east of the West River, adjacent to the mouth of the river and its confluence with Guilford Harbor. The West River drains an approximately 18.13-square-mile (mi^2) watershed to Guilford Harbor. Commercial marinas and recreational yacht clubs exist north and west of the project area. To the east, single-family residential properties abut Seaside Avenue. Chittenden Park – the gateway to the New England Trail – provides access to the mitigation site. A number of coastal resources exist on and adjacent to the project area including coastal beach and dune, rocky shorefront, coastal hazard areas, tidal wetlands, and estuarine embayments. A short wooden boardwalk connects the manicured lawn areas and athletic fields of Chittenden Park to the shoreline of Guilford Harbor to the south. West River Marsh Wildlife Area exists to the northwest of the site.

The project area consists of tidal wetlands, fed by the West River through tidal creeks and ditches, and manicured lawn of Chittenden Park. Topography is generally flat and comprised of a peat shelf though tidal creeks and excavated ditches exist at topographic lows compared to the surface of the marsh platform. Scattered bedrock outcrops punctuate the ground surface in areas. Surficial materials are mapped by Connecticut Environmental Conditions Online (CT ECO) as salt marsh and estuarine deposits. Based on Natural Resources Conservation Service (NRCS) mapping, the site contains one mapped upland soil unit and two wetland units (Table 3). Soils on the property consist of Westbrook mucky peat, Deerfield loamy fine sand, and Walpole sandy loam.

TABLE 3
Soil Unit Properties

Map Unit		Parent Material	Slope (%)	Drainage Class	High Water Table			Depth To Bedrock (in)
Sym	Name				Depth (ft)	Kind	Mos.	
Uptland Soil								
24A	Deerfield loamy fine sand	Sandy outwash	0-3	Moderately well drained	1.2-3.1	Apparent	Jan-Jun; Nov-Dec	>60
Upland Soil								
13	Walpole sandy loam	Sandy glaciofluvial deposits	0-3	Poorly drained	0-3.3	Apparent	Jan-Dec	>60
98	Westbrook mucky peat	Partly decomposed herbaceous organic material over loamy mineral material	0-2	Very poorly drained	0	Apparent	Jan-Dec	>60

The site is located within an area of mapped habitat for state-listed flora and fauna per CT DEEP Natural Diversity Database (NDDB).

Coastal resources reflect signs of impaired function and require restoration, enhancement, and rehabilitation. Approximately 5,117 linear feet of tidal creeks require hydrologic restoration and approximately 7.46 acres of the tidal wetland are dominated by common reed (*Phragmites australis*). The intent of the project is to foster hydrologic improvements through ditch and creek maintenance that will sustain the native halophytic plant community at the upper reaches of the marsh.

7.0 DETERMINATION OF CREDITS

The proposed multifaceted mitigation effort is intended to compensate for lost aquatic function of 0.88 acres of tidal or emergent wetland. In establishing the size of the mitigation wetland, mitigation multipliers were utilized (Table 4). The primary components of the mitigation effort are comprised of restoration or reestablishment of a 0.50-acre area of manicured lawn and approximately 7.69 acres of hydrologic and vegetative rehabilitation within the marsh complex. Restoration requires a 2 multiplier; thus, the 0.50 acres of restored tidal wetland will account for 0.25 acres of the total impacted wetland. The 0.63 acres of mitigation remaining will be provided by the 7.69 acres of tidal wetland rehabilitation. Rehabilitation is credited at a multiplier of 5 to 1 for hydrologic improvements and 10 to 1 for vegetation only. Even applying the more conservative measure of a 10 to 1 ratio, the proposed 7.69 acres of proposed vegetative and hydrologic improvements exceed the required threshold by 0.14 acres. Thus, the proposed project adheres to desired thresholds per the 2016 USACE mitigation guidance. The town will work with USACE and landowners to ensure that appropriate measures are in place to demonstrate the town's commitment to the project as well as to document the ecological success of the mitigation initiative.

TABLE 4
Mitigation Multipliers
Multiplier Tables
From Table C1 – 2016 Mitigation Guidance
Recommended Compensatory Mitigation
Multipliers for Direct Permanent Impacts to Wetlands[1]

Mitigation/ Impacts	Restoration (re-establishment)[2]	Creation (establishment)	Rehabilitation[3]	Preservation
Emergent Wetlands	2	3	5 if hydrology 10 if vegetation	20
Scrub-shrub Wetlands	2	3	5 if hydrology 10 if vegetation	20
Forested Wetlands	3	4	5 if hydrology 10 if vegetation	20
Upland[4]	$\geq 10^{5}$	N/A	Project specific	15[6]

[1] Includes nontidal and tidal wetlands
[2] Assumes no irreversible change has occurred to the hydrology. If there has been such a change, then the corresponding creation ratio should be used.
[3] 5 if hydrology is restored to its natural range (will generally include restoration of natural vegetation community); 10 if only the natural vegetation community is restored (hydrology is already within an acceptable range)
[4] This is when upland is used for wetland mitigation, NOT mitigation for upland impacts, which are not regulated.
[5] Only applies if existing condition is pavement or structure AND should complement aquatic functions
[6] 100' upland buffer recommended for restoration, creation, and rehabilitation sites would be credited here.

8.0 MITIGATION WORK PLAN

Tidal wetland rehabilitation, restoration and preservation are proposed within the mitigation area (Appendix A, Figure 1). Approximately 5,117 linear feet of tidal creeks, approximately 2-feet wide, will be rehabilitated throughout the marsh complex. Eradication of 324,958 square feet of common reed (*Phragmites australis*) through chemical and mechanical means will take place, along with hydrologic improvements through the ditch and creek maintenance that will allow for a minimally managed landscape over time. A full existing-conditions survey will take place prior to the initiation of activities. These data will prove useful in tracking the progression of marsh restoration through the monitoring period and beyond. All work is proposed to be conducted by the CT DEEP Wildlife Habitat and Mosquito Management (WHAMM) unit (Appendix A).

8.1 Tidal Creek Restoration

Hydrology of portions of tidal creeks and ditches will be restored through the removal of accumulated organic debris to facilitate exchange of nutrients and semidiurnal tidal flow. This rehabilitation approach has proven effective in numerous marshes throughout Connecticut.

Maintenance of the ditches and creeks within the marsh complex will improve the connectivity of tidal flow between the upper reaches of the marsh and the West River.

8.2 Tidal Wetland Restoration

Tidal wetlands will be created on site to provide additional wildlife habitat, flood-storage capacity, and nutrient retention. These areas will total approximately 0.50 acre. The ground surface will be scarified to match topography of adjacent tidal wetlands. It is anticipated that the area will naturally recolonize with native plant species given the nexus to the seed source. Monitoring will take place and halophytic plants will be installed should sufficient germination not take place within a growing season. Given the landscape position of this area and the likelihood that much of this portion of Guilford was all tidal wetlands, this component of the project is considered restoration as opposed to creation.

8.3 Phragmites Eradication

Common reed (*Phragmites australis*) eradication will be implemented to enhance wildlife habitat and provide greater structural complexity and contribution to wetland function. Eradication will be achieved through a combination of mowing and herbicide treatment. Herbicide application will occur first during late summer, followed by mowing during the late fall. An additional herbicide application will be implemented the following spring. This process will repeat as required for 3 to 5 years. Each of these management initiatives will be coordinated with the Town of Guilford and USACE.

- Phase 1: Initial application of herbicide (summer). Spray or apply an imazapyr-based herbicide (such as HabitatTM) to each shoot/leaf blade during late summer preferably during or just after tasseling (e.g., flowering), when the plant is supplying nutrients to the rhizome, thus translocating the herbicide into the roots, killing the plant.
    - The selected herbicide must be mixed with water and a surfactant. The surfactant will thicken the viscosity of the herbicide, allowing it to stick to leaves and subsequently be absorbed by the plant.
    - A glyphosate herbicide is an alternative option. An imazapyr-based herbicide is preferred because it is typically translocated into the rhizome of the plant and is therefore more effective at killing common reed than glyphosate. Glyphosate treatment methods may take 3 to 4 years whereas using imazapyr treatments typically takes 2 years.
    - Both glyphosate and imazapyr herbicides are not selective and will kill grasses and broad-leaved plants alike, so care should be used.
    - Toxicity tests indicate that glyphosate and imazapyr herbicides are virtually nontoxic to all aquatic animals.

- Phase 2: Physical removal (winter). Mowing of the common reed is recommended following the first hard frost. This can be completed with a *Marshmaster* mulching machine or similar. Small stands (< 20 stalks) can be removed using a weed whacker. Physically breaking down the biomass of the common reed through mulching or grinding is recommended provided that common reed has already been removed.

- Phase 3: Second application of herbicide (spring). Re-treat common reed stand with an imazapyr-based herbicide in mid spring to prevent recovery of the stand. Follow-up treatments in following years are expected to be required for management area one.

8.4 Erosion Control Measures

Sediment filter fence will be placed around any areas of proposed grading and/or ground disturbance during construction. Areas to be disturbed will be revegetated with native wetland vegetation.

Temporary devices and structures to control erosion and sedimentation in and around mitigation sites shall be properly maintained at all times. The devices and structures shall be disassembled and properly disposed of as soon as the site is stable but no later than November 1 of the third full growing period after planting. Sediment collected by these devices will be removed and placed upland in a manner that prevents its erosion and transport to a waterway or wetland.

9.0 MAINTENANCE PLAN

The maintenance activities – invasive plant management and erosion control – will be completed by hand or with hand-propelled equipment unless approved otherwise by the Town of Guilford and/or the USACE. Invasive plants will be eliminated by hand or by hand tools or via the application of herbicides in accordance with applicable laws and manufacturers' recommendations and as per preceding mandates (i.e., no broad foliar spray). Areas of eroded soil will be regraded using placed topsoil mulched with hay and seeded.

10.0 PERFORMANCE STANDARDS

10.1 Tidal Creek Functionality

A minimum of 90% of the site must meet desired hydrology levels. All slopes, soils, substrates, and constructed features within and adjacent to the mitigation site shall be stable.

10.2 Wetland Vegetation

The goal of the proposed mitigation project will include a minimum of 80% cover of native wetland vegetation and less than 10% cover of non-native vegetation in the tidal wetland. The following table provides the performance standards to be assessed during the 5-year monitoring period for the mitigation area.

TABLE 5
Performance Goals for Phragmites Eradication

Management Year*	Invasive Species Percent Cover per Treatment Year	Native Species Percent Cover per Treatment Year
Year 1	<50%	>30%
Year 2	<40%	>50%
Year 3	<30%	>60%
Year 4	<20%	>70%
Year 5	<10%	>80%

* Following first year of restoration work

11.0 MONITORING REQUIREMENTS

11.1 Notification of Construction Completion

Within 60 days of completing a mitigation project that includes restoration, creation, and/or rehabilitation, the applicant will submit a signed letter to the USACE Policy and Technical Support Branch, specifying the date of completion of the mitigation work and the USACE permit number.

If mitigation construction is initiated in or continues throughout the year but is not completed by December 31 of any given year, the permittee will provide the USACE Policy and Technical Support Branch a letter providing the date mitigation work began and the work completed as of December 31. The letter will be sent no later than January 31 of the next year. The letter will include the USACE permit number.

11.2 Annual Monitoring

For each of the first five full growing periods following construction of the mitigation site(s), the site(s) will be monitored and annual monitoring reports submitted. Observations will occur at least two times during the growing period – in late spring/early summer and again in late summer/early fall. Each annual monitoring report, in the format provided in the New England District Compensatory Mitigation Guidance, will be submitted to the USACE Regulatory Division, Policy and Technical Support Branch no later than December 15 of the year being monitored. Failure to perform the monitoring and submit monitoring reports constitutes permit noncompliance. A self-certification Form 9 will be completed and signed as the transmittal cover sheet for each annual monitoring report and will indicate the permit number and the report number (Monitoring Report 1 of 5, for example). The reports will address the following performance standards in the summary data section and will address the additional items noted in the monitoring report requirements in the appropriate section. The reports will also include the monitoring-report appendices. The first year of monitoring will be the first year that the site has been through a full growing period after completion of construction and planting. For these permit special conditions, a growing period starts no later than May 31. However, if there are problems that need to be addressed and if the measures to correct them require prior approval from the USACE, the permittee will contact the USACE by phone (800-343-4789 in Connecticut) or letter as soon as the need for corrective action is discovered.

Monitoring will include assessment of functionality of tidal creeks and vegetative cover (native and non-native) of rehabilitated and re-established wetlands. Photo stations will be established during the first year of monitoring and will be used to help assess success of the mitigation. Vegetation plots will be established to identify cover and natural recruitment. Annual monitoring reports containing data collected during monitoring events, assessment of monitoring success, and recommendations for continued maintenance will be submitted to the USACE.

11.3 Final Annual Monitoring

A postconstruction assessment of the condition of the mitigation site(s) shall be performed at the end of the monitoring period. The assessment report shall be submitted to the USACE by December 15 of the year the assessment is conducted; this will coincide with the year of the final monitoring report, so it is acceptable to include both the final monitoring report and assessment in the same document.

12.0 LONG-TERM MANAGEMENT PLAN

The Town of Guilford will be responsible for long-term management and stewardship of the mitigation site. The town will continue to monitor the mitigation site following the final mitigation monitoring year, and long-term management will include managing invasive species as needed.

13.0 ADAPTIVE MANAGEMENT PLAN

Remedial measures will be implemented – at least 2 years prior to the completion of the monitoring period – to attain the performance standards described in Section 10.0 within five growing periods after completion of construction of the mitigation site. Should measures be required within 2 years of the end of the original monitoring period, the monitoring period will be extended as necessary to ensure 2 years of monitoring after the remedial work is completed. Measures requiring earth movement or changes in hydrology will not be implemented without written approval from the USACE.

Adaptive management strategies will include the use of herbicides and hand removal to combat invasive species growth, and the proposed strategies may be modified to increase frequency, change herbicide type, or target certain areas. Replanting will be implemented if needed.

14.0 FINANCIAL ASSURANCES

The permittee will post a performance bond for $TBD for construction of the wetland mitigation, monitoring, and potential remedial action as determined by the USACE. This figure was based on the attached worksheet of construction and monitoring costs, plus a specified inflation factor, plus a 10% contingency. The bond shall be in the form of a firm commitment, supported by corporate sureties whose names appear on the list contained in Treasury Department Circular 57011. The bond must be in place at all times the construction is underway and during the entire monitoring period, including any extensions required by the USACE to ensure permit compliance. Permitted impacts on aquatic resources will not occur until the USACE has approved the bond

format, the bond has been executed, and the original [assumes the USACE is the obligee] has been provided to the USACE.

Upon completion of construction and written concurrence from the USACE, the bond may be reduced to an amount that will cover the costs of monitoring and possible remedial actions.

15.0 CONCLUSION

The preceding report provides the ecological and technical basis for implementation of a permittee-responsible tidal wetland mitigation project adjacent to the mouth of the West River. The project will compensate for unavoidable direct impacts on aquatic resources resulting from roadway work necessary to improve resiliency and access for public safety. The project adheres to the USACE concept of "watershed approach" by siting proposed mitigation adjacent to the area of impact. The proposed project will provide meaningful, measurable ecological benefit to the tidal wetlands within the town's purview. The ecological value of the proposed mitigation comports with USACE mitigation requirements in relation to the unavoidable impacts of the permitted projects and type of affected resource areas.

16.0 REFERENCES

Benoit, Lori K. and Robert A. Askins. 1999. Impact of the spread of *Phragmites* on the distribution of birds in Connecticut tidal marshes. *Wetlands, Volume 19, Issue 1, pp 194-208.*

Hellings, Samuel E. and John L. Gallagher. 1992. The Effects of Salinity and Flooding on *Phragmites australis. Journal of Applied Ecology. Vol 29, No. 1, pp, 41-49.*

Silliman, Brian R. and Mark D. Bertness. 2004. Shoreline Development Drive Invasion of *Phragmites australis* and the Loss of Plant Diversity on New England Salt Marshes. *Conservation Biology, Vol. 18, Issue 5, pp. 1424-1434.*

Prepared by:

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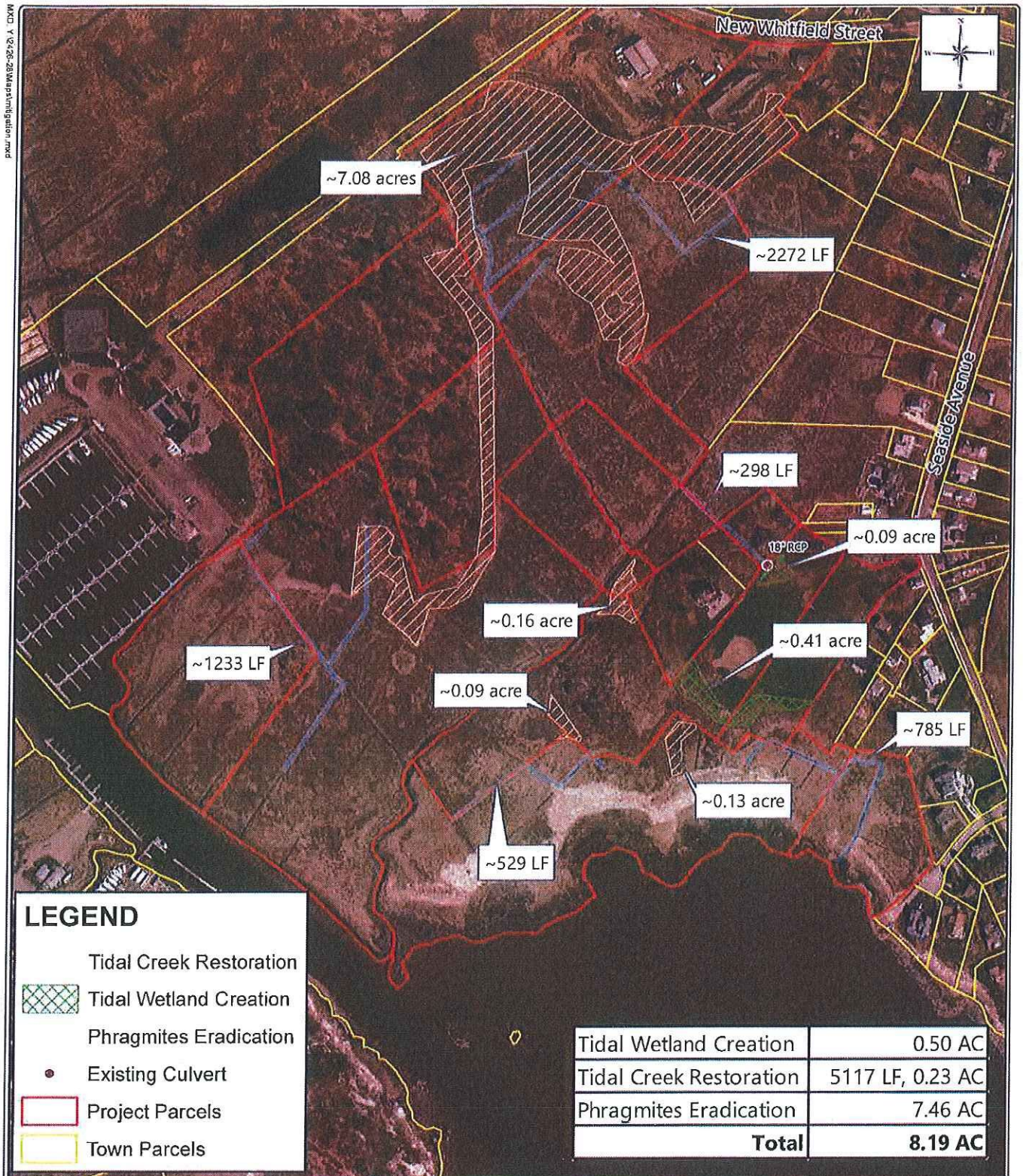
Senior Project Manager, Environmental Science

2426-28-s1919-rpt

APPENDIX A

Figure 1 – Proposed Tidal Wetland Restoration (Reestablishment) and Rehabilitation



Tidal Wetland Creation	0.50 AC
Tidal Creek Restoration	5117 LF, 0.23 AC
Phragmites Eradication	7.46 AC
Total	**8.19 AC**

MILONE & MACBROOM

195 Church Street
New Haven, Connecticut 06510
(203) 344-7887
www.mminc.com

TIDAL WETLAND CREATION, TIDAL CREEK RESTORATION & PHRAGMITES ERADICATION

TOWN OF GUILFORD MITIGATION SITES

NEW WHITFIELD STREET
GUILFORD, CONNECTICUT

SOURCE: 2016 AERIAL PHOTO, CT DEEP

DATE: September 17, 2019
SCALE: 1"=350'
PROJ. NO.: 2426-28

DESIGNED	DRAWN	CHECKED
AYO	AYO	MBR

DRAWING NAME:

FIGURE 1

APPENDIX B

CT DEEP Work Plan and Cost Breakdown

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

79 Elm Street • Hartford, CT 06106-5127 www.ct.gov/deep Affirmative Action/Equal Opportunity Employer

To: Megan Raymond
From: Roger Wolfe
Date: Aug. 20, 2019
Subject: West River mitigation costs

Megan,

I've worked up a cost breakdown for the proposed mitigation work at West River, Guilford. The costs include approximately 8 acres of invasive Phragmites control over a consecutive 3-year period, using approved herbicides low ground pressure equipment to apply the herbicides and mow the dead stems. Further Integrated Marsh Management (IMM) work will be completed which includes the reestablishment of 5020 linear feet of tidal channels and the creation of 0.03 acre of shallow pools for wildlife habitat and mosquito source reduction. Additionally, a 0.23 acre area of adjacent upland will be lowered to a reference marsh elevation to create new tidal salt marsh. This includes QA/QC of work during construction and monitoring of the site for Phragmites resurgence for 2 years following completion of work. Cost for additional Phragmites control work at that time will be at the expense of CT DEEP WHAMM Program.

Phragmites control: 3 consecutive years of herbiciding and mowing; incl. mobilization/demobilization, herbiciding up to 8 acres (first year) in late summer, mowing in winter, <2 ac. (year 2), <1 ac. (year 3).

Total: $3680.00

Excavation: incl. 2 low ground pressure excavators, mobilization/demobilization, 2 operators, excavated material to be side-cast and spread on site to final depth of <3" or, where practicable, moved and groomed into an adjacent upland edge, 16 days barring weather and tides, monitoring and quality control.

Total: $56,820.00

Total cost of phragmites control and excavation work: TOTAL: **$60,500.00**