APPENDIX H

NYSDEC Consultation (Permits)

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

February 14, 2017

Mr. Roger Evans, Permit Administrator
New York State Department of Environmental Conservation
SUNY at Stony Brook
50 Circle Road
Stony Brook, NY 11790

Re: Article 25 Permit
Gardiner County Park
SCTM# 0500-47000-100-1000
NP&V #16154

Dear Roger:

Nelson, Pope & Voorhis (NP&V)/Nelson & Pope (N&P) has been retained by Suffolk County Department of Public Works, Division of Vector Control (c/o Tom Iwanejko) to obtain the necessary permits for the improvements proposed at the above referenced site. The proposed project involves the restoration of marsh habitat and associated reduction of mosquito breeding areas through the use of integrated marsh management techniques.

The project site is bisected by an access road that extends from the parking lot located on the north side of the property south to the Great South Bay. As the access road bisects the marsh, the project site is effectively divided into two separate and unique marsh systems; Gardiner County Park East (Gardiner East) and Gardiner County Park West (Gardiner West).

Gardiner West and Gardiner East are both the sites of historic grid ditching which has contributed to the long-term degradation of the marsh system. When originally constructed, the linear ditches were arbitrarily placed and consideration was not given to the typical scour and sediment deposition processes that occurs along a naturally flowing channel. The linear ditches run perpendicular or parallel to each other and create small panels between the grid-like ditches. As a result, a significant loss in marsh habitat has occurred at this site. In addition to the marsh loss, berms have formed along the edges of the ditches contributing to the change in the tidal flow through the marsh system, and ultimately creating ideal mosquito breeding habitat. The proposed project seeks to return the marsh to a more natural system to ameliorate the impacts the marsh has experienced over time.

The project consists of five main components; removal of material from the existing berms and utilization of that material in the filling of historic grid ditching, the creation of runnels, naturalization of channels and the creation of micro-pools. The project proposes filling of approximately ±6,770 feet (FT) of existing linear mosquito ditches within Gardiner West and ±3,994 FT within Gardiner East. To fill these ditches, material from the berms located along the banks of the ditches will be utilized. Capturing material from the berms will help create a more level marsh surface that more closely resembles natural conditions. Revegetation across the filled ditches and in the disturbed area associated with berm removal will occur naturally from existing seed stock present in the soil and through encroachment from the

vegetation along the edges of the disturbance. Coir logs will be utilized to help fill the mosquito ditches, as sufficient volume to fill the ditches is not available within the berms. coir logs are biodegradable coconut fiber rolls that can be placed in the existing mosquito ditches, secured and covered with material captured from the berms. It is expected that the coir logs will slowly degrade and be replaced by sediment over time through natural sediment deposition processes that occur within the marsh system.

Narrow, shallow channels (called runnels) are proposed to connect existing pannes to the naturalized channels. This will allow the standing water to drain from pannes and prevent future standing water from occurring in the existing depressions. Once standing water is no longer present, it is anticipated that natural sediment deposition and associated revegetation of the pannes will occur in subsequent growing seasons.

The majority of the remaining ditches will be naturalized in order to achieve a function that more closely mimics natural marsh conditions. Naturalized channels will utilize the same general layout of the remaining mosquito ditches, however, they will be altered to create more meandering channels to aid in slowing the water velocity within the ditches during tide inflow and outflow. As illustrated on the Proposed Marsh Restoration Details, ditch berm soil will be moved from the berm to the inner bank of the existing ditch in select locations. This will create small curves throughout the existing ditch that mimics natural channel conditions. It is expected that scour will occur on the outside of the curve created within the ditch and sediment deposition will occur on the inside of the created curve. This will prevent sediment from gathering on top of the banks of the channel and creating new berms, which currently exacerbates marsh loss. Approximately ±2,920 LF of naturalized channel will be created through the re-alignment of ±793 FT of existing mosquito ditches within Gardiner East. Approximately ±6,671 LF of naturalized channel will be created through the re-alignment of ±2,045 FT of existing mosquito ditches within Gardiner West.

Finally, 10 micropools are proposed within Gardiner East and 22 micropools are proposed within Gardiner West. At a maximum, micropools will be 10' x 5 x 2'. Micropools are designed to create fish habitat within the marsh and will be located in areas where Suffolk County Department of Public Works, Division of Vector Control, has detected mosquito larvae. The proposed micropools will be connected to tidal flow through runnels. Fish are natural predators of mosquitos and the creation of fish habitat in these areas is expected to reduce the overall mosquito population. Furthermore, as these areas are dominated by the invasive reed *Phragmites australis,* the creation of micropools will have limited disturbance to desirable marsh vegetation.

Low ground pressure (<2 psi) machinery will be utilized during construction in order to minimize the impact to the existing healthy marsh areas. Construction access will be from the existing adjacent golf course, and all staging and equipment storage will occur in the upland area.

I have enclosed all of the required application materials for your review:

1. Joint Application Form and Short EAF.
2. Project Narrative
3. $900 Permit Application Fee
4. Letter of Authorization from Suffolk County DPW
5. Two (2) copies of the Location map
6. Photographs of existing conditions with reference aerial photograph
7. Copy of the NYSDEC Tidal Wetlands Map
8. Four (4) copies of the Proposed Marsh Restoration Plan (Gardiner East)
9. Four (4) copies of the Proposed Marsh Restoration Plan (Gardiner West)

Please let me know if you need any additional information, and do not hesitate to call should you have any questions. Thank you.

Sincerely,

NELSON, POPE & VOORHIS, LLC

Hannah Emouna
Environmental Scientist

cc: Tom Iwanejko, SCDPW
File

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 1
SUNY @ Stony Brook, 50 Circle Road, Stony Brook, NY 11790
P: (631) 444-0365 I F: (631) 444-0360
www.dec.ny.gov

RECEIVED
APR 25 2018
NELSON & POPE

April 13, 2018

Suffolk County DPW- Vector Control
Attn: Tom Iwanejko
335 Yaphank Avenue
Yaphank, NY 11980

RE: Permit No.: 1-4728-05619/00001
Gardiner's County Park

Dear Permittee:

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your permit for the referenced activity. Please carefully read all permit conditions and special permit conditions contained in the permit to ensure compliance during the term of the permit. If you are unable to comply with any conditions, please contact us at the above address.

Also enclosed is a permit sign which is to be conspicuously posted at the project site and protected from the weather and a Notice of Commencement/Completion of Construction. Please note, the permit sign and Notice of Commencement/Completion of Construction form are sent to either the permittee or the facility application contact, not both.

Sincerely,

Claire Werner

Claire Werner
Environmental Analyst II

cc: Nelson, Pope & Voorhis, LLC
A. Fournier, Marine Resources
BMHP
BOH
File

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
SUFFOLK COUNTY
H LEE DENNISON BLDG

HAUPPAUGE, NY 11788

Facility:
GARDINER'S COUNTY PARK
S/S/O MONTAUK HWY 570' E/O OAKNECK LN
BAY SHORE, NY 11706

Facility Application Contact:
NELSON POPE & VOORHIS LLC
572 WALT WHITMAN RD
MELVILLE, NY 11747
(631) 427-5665

Facility Permit Contact:
THOMAS J IWANEJKO
SUFFOLK CO - DEPT OF PUBLIC WORKS
335 YAPHANK AVE
YAPHANK, NY 11980

Facility Location: in ISLIP in SUFFOLK COUNTY
Facility Principal Reference Point: NYTM-E: 645.896 NYTM-N: 4506.493
Latitude: 40°41'47.2" Longitude: 73°16'23.4"
Project Location: Gardiner's County Park, Montauk Hwy Watercourse: Great South Bay
Authorized Activity: Conduct marsh restoration activities at two separate marsh systems at Gardiner's County Park (East and West) which include improving the existing degraded marsh ditch features by strategically filling them with local material and coir logs and creating naturalized tidal channels to improve tidal exchange between the bay and the marsh interior. Create micropools connected to tidal channels to enhance natural conditions and to control marsh mosquito species. All authorized activities must be in strict conformance with the attached 3 page "Construction Protocols and Best Management Practices" and plans (6 sheets) prepared by Nelson & Pope, last revised 2/2/18, all stamped NYSDEC approved on 4/13/18. (CKW)

Permit Authorizations

Tidal Wetlands - Under Article 25
Permit ID 1-4728-05619/00001
New Permit Effective Date: 4/13/2018 Expiration Date: 4/12/2023
Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 1-4728-05619/00002
New Permit Effective Date: 4/13/2018 Expiration Date: 4/12/2023
Excavation & Fill in Navigable Waters - Under Article 15, Title 5
Permit ID 1-4728-05619/00003
New Permit Effective Date: 4/13/2018 Expiration Date: 4/12/2023
Freshwater Wetlands - Under Article 24
Permit ID 1-4728-05619/00004
New Permit Effective Date: 4/13/2018 Expiration Date: 4/12/2023

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: ROGER EVANS, Regional Permit Administrator
Address: NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY 11790 -3409

Authorized Signature: Roger Evans Date 4 / 19 / 2018

Distribution List

NELSON POPE & VOORHIS LLC
THOMAS J IWANEJKO
ALEXA FOURNIER
Bureau of Marine Habitat Protection
Habitat
CLAIRE K WERNER

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: TIDAL WETLANDS; WATER QUALITY CERTIFICATION; EXCAVATION & FILL IN NAVIGABLE WATERS; FRESHWATER WETLANDS

1. **Post Permit Sign** The permit sign enclosed with this permit shall be posted in a conspicuous location on the worksite and adequately protected from the weather.

2. **Notice of Commencement** At least 48 hours prior to commencement of the project, the permittee and contractor shall sign and return the top portion of the enclosed notification form certifying that they are fully aware of and understand all terms and conditions of this permit. Within 30 days of completion of project, the bottom portion of the form must also be signed and returned, along with photographs of the completed work.

3. **Vegetation Cutting Restriction** No cutting of any woody vegetation upslope of the tidal wetland boundary for the purposes of access or staging is permitted.

4. **No Construction Debris in Wetland or Adjacent Area** Any debris or excess material from construction of this project shall be completely removed from the adjacent area (upland) and removed to an approved upland area for disposal. No debris is permitted in wetlands and/or protected buffer areas.

5. **Storage of Equipment, Materials** The storage of construction equipment and materials shall be confined as per the approved protocol.

6. **Disposal Locations** All excavated material shall be appropriately disposed of as per the project plan with minimal disturbance and/or impact to vegetated marsh areas. Disposal of excess material beyond the approved project site will require further written approval from the Department (permit, modification, amendment).

7. **Low Ground Pressure Equipment** All ground and heavy equipment used for this project shall be low ground pressure equipment with a ground pressure of 2 psi or less on the marsh surface. Storage of equipment and materials when not in operation, shall be limited to upland areas of the project, or on **the marsh surface only if marsh mats or plywood are used.**

8. **Fueling Areas** Fueling of equipment is strictly prohibited within tidal wetlands and within 100 feet of the tidal wetland boundary. Fueling areas must be approved by the department and contained by haybales or other approved containment devices. Spills must be prevented from entering tidal wetlands and/or waterways. Should a spill occur, the permittee shall notify the office of Regional Habitat - TW immediately and shall provide a plan for containment, clean-up and restoration of the impacted area for the approval of the department.

9. **Work During WInter** Use of heavy equipment and marsh/ditch excavation are limited to the winter months (December 1 to April 30, inclusive) to minimize impacts to existing marsh vegetation.

10. **Activities Consistent with Approved Plans** All activities and marsh alterations must be consistent with the approved plan. Activities or alterations beyond the scope of the approved project and/or not explicitly authorized by the permit will require further written approval of the Regional Habitat - TW office prior to commencement.

11. **Annual Monitoring Report** The permittee must submit a written report of annual monitoring efforts, data and analysis by January 30 of each year for the approval of the Regional Habitat - TW office. Data collection efforts will be consistent with the approved monitoring plan. Any changes to approved monitoring protocols will require the written approval of the Regional Habitat Manager.

12. **Work** All work shall be done under the direct supervision of an Environmental Supervisor, as described in the approved Construction Protocols and Best Management Practices, attached.

13. **No Interference With Navigation** There shall be no unreasonable interference with navigation by the work herein authorized.

14. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

15. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

16. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

17. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Nelson & Pope, (6 sheets) last revised 2/2/18 and attached 3 page "Construction Protocols and Best Management Practices", all stamped NYSDEC approved on 4/13/18.

18. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY11790 -3409

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Excavation & Fill in Navigable Waters, Freshwater Wetlands, Tidal Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

NOTICE OF COMMENCEMENT OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE Or Fax to: 631-444-0297
Bureau of Marine Habitat Protection - NYSDEC
50 Circle Road
Stony Brook, NY 11790-3409

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS: _____

_____ TELEPHONE: _____

Dear Sir: _____

Pursuant to the special conditions of the referenced permit, you are hereby notified that the authorized activity shall commence on _____ . We certify that we have read the referenced permit and approved plans and fully understand the authorized project and all permit conditions. We have inspected the project site and can complete the project as described in the permit and as depicted on the approved plans. We can do so in full compliance with all plan notes and permit conditions. The permit, permit sign, and approved plans will be available at the site for inspection in accordance with General Condition No. 1. (Both signatures required)

PERMITEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE MUST BE SENT TO THE ABOVE ADDRESS AT LEAST TWO DAYS PRIOR TO COMMENCEMENT OF THE PROJECT AND /OR ANY ASSOCIATED ACTIVITIES. FAILURE TO RETURN THIS NOTICE, POST THE PERMIT SIGN, OR HAVE THE PERMIT AND APPROVED PLANS AVAILABLE AT THE WORK SITE FOR THE DURATION OF THE PROJECT MAY SUBJECT THE PERMITTEE AND/OR CONTRACTOR TO APPLICABLE SANCTIONS AND PENALTIES FOR NON-COMPLIANCE WITH PERMIT CONDITIONS.

Cut along this line X X X X X X X

NOTICE OF COMPLETION OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE Or Fax to: 631-444-0297
Bureau of Marine Habitat Protection - NYSDEC
50 Circle Rd.
Stony Brook, NY 11790-3409

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS:

_____

_____ TELEPHONE: _____

Pursuant to special conditions of the referenced permit, you are hereby notified that the authorized activity was completed on _____ . We have fully complied with the terms and conditions of the permit and approved plans. (Both signatures required)

PERMITEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE, WITH PHOTOGRAPHS OF THE COMPLETED WORK AND/OR A COMPLETED SURVEY, AS APPROPRIATE, MUST BE SENT TO THE ABOVE ADDRESS WITHIN 30 DAYS OF COMPLETION OF THE PROJECT.

NOTICE OF COMMENCEMENT OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE **Or Fax to**: 631-444-0272
Bureau of Habitat-Freshwater Wetlands - NYSDEC
50 Circle Road
Stony Brook, NY 11790-3409

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS: _____

_____ TELEPHONE: _____

Dear Sir:

Pursuant to the special conditions of the referenced permit, you are hereby notified that the authorized activity shall commence on _____ _____. We certify that we have read the referenced permit and approved plans and fully understand the authorized project and all permit conditions. We have inspected the project site and can complete the project as described in the permit and as depicted on the approved plans. We can do so in full compliance with all plan notes and permit conditions. The permit, permit sign, and approved plans will be available at the site for inspection in accordance with General Condition No. 1. (Both signatures required)

PERMITTEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE MUST BE SENT TO THE ABOVE ADDRESS ***AT LEAST TWO DAYS PRIOR TO COMMENCEMENT OF THE PROJECT*** *AND /OR ANY ASSOCIATED ACTIVITIES. FAILURE TO RETURN THIS NOTICE, POST THE PERMIT SIGN, OR HAVE THE PERMIT AND APPROVED PLANS AVAILABLE AT THE WORK SITE FOR THE DURATION OF THE PROJECT MAY SUBJECT THE PERMITTEE AND/OR CONTRACTOR TO APPLICABLE SANCTIONS AND PENALTIES FOR NON-COMPLIANCE WITH PERMIT CONDITIONS.*

Cut along this line X X X X X X X

NOTICE OF COMPLETION OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE **Or Fax to**: 631-444-0272
Bureau of Habitat- Freshwater Wetlands - NYSDEC
50 Circle Road
Stony Brook, NY 11790-3409

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS: _____

_____ TELEPHONE: _____

Pursuant to special conditions of the referenced permit, you are hereby notified that the authorized activity was completed on _____ _____. We have fully complied with the terms and conditions of the permit and approved plans. (Both signatures required)

PERMITTEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE, WITH PHOTOGRAPHS OF THE COMPLETED WORK AND/OR A COMPLETED SURVEY, AS APPROPRIATE, ***MUST BE SENT TO THE ABOVE ADDRESS WITHIN 30 DAYS OF COMPLETION OF THE PROJECT.***

95-20-1 (8/87)—9d

New York State
Department of Environmental Conservation

NOTICE

The Department of Environmental Conservation (DEC) has issued permit(s) pursuant to the Environmental Conservation Law for work being conducted at this site. For further information regarding the nature and extent of work approved and any Departmental conditions on it, contact the Regional Permit Administrator listed below. Please refer to the permit number shown when contacting the DEC.

Regional Permit Administrator

Permit Number 1-4728-05619/00001 ROGER EVANS

Expiration Date 4/12/2023

NOTE: This notice is **NOT** a permit

CONSTRUCTION PROTOCOLS & BEST MANAGEMENT PRACTICES

All phases of the restoration project will be completed by Suffolk County Department of Public Works (SCDPW). As there are no subcontractors, SCDPW will be able to actively and adaptively mitigate any issues that arise during restoration. The following construction protocols and best management practices will be utilized for the proposed restoration projects.

1.1 Environmental Supervisor

Environmental Supervisor will be assigned to the proposed projects to monitor the construction and will be responsible for supervision and implementation of daily work activities. The supervisor will be present prior to and during any work located within the marshes, and will coordinate with machine operators to determine the path of least impact, need for mats and when work should be suspended due to marsh conditions.

The Environmental Supervisor will be responsible for the identification of the best routes for machinery and personnel based on field conditions. The supervisor, with the help of onsite SCDPW staff, will assess field conditions and determine if conditions are suitable for restoration activities or if the stop work field conditions, as detailed below, are met. The Environmental Supervisor will determine the need for the placement of marsh mats and/or plywood in any waterlogged areas, and may require adjustments in silt fencing requirements to fit individual site conditions.

1.2 Field Conditions Evaluation

SCDPW shall take precautions to avoid tramping or compacting existing vegetated salt marsh and minimize the compaction of peat. In general, this will include the use of low ground pressure vehicles on the marsh (< 2.0 lbs/sq. ft.), and varying transit routes. Work will not occur if the marsh surface is saturated excessively or following storm & precipitation events that result in the flooding of the marsh surface as determined by Environmental Supervisor.

1.3 Construction Phasing

- The construction will begin at the location furthest from the construction access point and progress landward towards the project access. The outer marsh areas will be accessed from the upland in a way that minimizes marsh disturbance.

- For any ditch that will be filled, sediment barriers will be installed prior to any ditch filling.

- Construction routes across the marsh as well as at the access points will be offset each day to reduce the amount of disturbance to the area. Construction routes will be determined by the Environmental Supervisor and machinery operators at the start of each work day. In areas where there is a need to stop and retrace the same path a halftrack offset method will be used.

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO 1-4728-05619/00001
DATE 4/13/18 CKW

- Marsh mats or plywood will also be utilized as necessary on any frequently utilized machinery paths and / or turning points (see Section 1.6 below).

1.4 Construction Staging and Site Access Paths

- The primary objective when working in the marsh is not to alter the structural integrity of the peat column.

- The staging areas have been selected in upland stabilized areas as shown. Construction access paths from the staging areas to the marsh systems have been identified and may require stabilization with marsh mats or plywood depending on site specific conditions and vehicle movements. The Environmental Supervisor will identify areas of repetitive vehicle traffic and direct the usage of marsh mats/plywood throughout the duration of restoration activities.

- The use of roadways and staging areas during the construction phase shall not entail any alteration of existing grades or ground surfaces. (such as cutting, filling, rutting, or compaction)

- If equipment must be staged overnight within the marsh, the following protocols will be followed:
  - Equipment shall be stored on the marsh surface only if marsh mats or plywood are used.
  - Equipment storage on the marsh (if necessary) shall be moved daily to reduce prolonged impact on any one area.
  - Equipment shall be removed from the marsh in advance of extremely high tide or inclement weather.

1.5 Construction Vehicles

SCDPW will utilize equipment designed to limit disturbance to the marsh vegetation during the construction phase of the project. All machinery will be "low-impact machinery" that operates with ground pressure of 2.0 pounds per square inch (psi) or less. Machinery to be utilized includes Kobelco 70 SR excavator, Quality dump truck, Quality ditcher and a piston bully.

1.6 Marsh Mats

Marsh mats/plywood will be utilized at repetitive use locations (i.e., site access paths, bottle necks, frequently used turning points, under equipment that is idling, staging areas, uneven grade or waterlogged areas, etc.) at the discretion of the Environmental Supervisor.

1.7 Ongoing Assessment and Adaptive Management

SCDPW will actively monitor the project post-construction for functionality. Assessments will occur three or more times per growing season, continuing until the end of the 2022 monitoring season.

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO 2 of 3
DATE

Some examples of assessments include the following potential conditions:

- Displacement of coir logs
- Subsidence within filled ditches resulting in low points/standing water
- Restriction of flow within remaining ditches
- Excessive standing water within pannes or creation of new pannes
- Inadequate vegetation regrowth within disturbed areas

Should any of the above conditions be observed, SCDPW will perform adaptive maintenance or repairs of the affected portion(s) to address the identified issue in consultations with NYSDEC. Work will be done by hand if practicable, however, SCDPW will use machinery required to complete restoration activities if necessary. All maintenance and repairs will follow the Construction Protocols and BMP outlined above should machinery be required to complete adaptive management goals. Some adaptive management methods are listed below:

- Re-staking and restoration of sediment cover over coir logs
- Modification of elevations to create a level surface suitable for revegetation
- Removal of sediments within existing ditches to restore adequate flow and prevent sedimentation
- Maintenance/creation of runnels to allow for draining of standing water from pannes
- Revegetation of low marsh species within disturbed areas if revegetation does not occur within two growing seasons

NYSDEC
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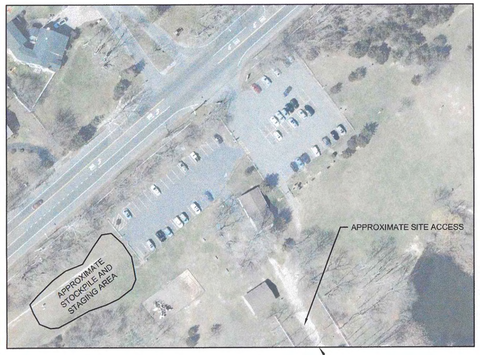
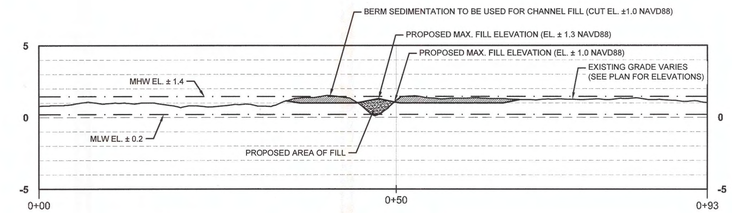
PERMIT NO 3 of 3
DATE CKW



± 1,490 FT.



SECTION 'D-D'

SCALE: 1" = 10' (HORIZ.)
1" = 5' (VERT.)

GENERAL NOTES:

1) TO THE GREATEST EXTENT PRACTICAL, CONSTRUCTION VEHICLES AND CONSTRUCTION CREWS WILL AVOID TRAVERSING THE SAME PATH TO REDUCE THE COMPACTION WITHIN THE MARSH
2) THE TERMINI OF ALL EXISTING DITCHES TO BE FILLED WILL BE STAKED OUT PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
3) THE LOCATION OF RUNNELS INTENDED TO ALLOW FOR THE DRAINING OF PANNES WITHIN THE GRID CELLS IS SUBJECT TO THE DISCRETION OF THE PROJECT SUPERVISOR AS DETERMINED BY FIELD OBSERVATIONS PRIOR TO CONSTRUCTION.
4) IN ORDER TO LIMIT DISTURBANCE TO DESIRABLE MARSH VEGETATION, PROPOSED MICROPOOLS WILL BE LOCATED WITHIN EXISTING PANNES OR MONOCULTURES OF INVASIVE *PHRAGMITES AUSTRALIS* WHEREVER POSSIBLE.
5) TO ENSURE THE SAFETY OF THE PUBLIC AS WELL AS THE SAFETY OF THE CONSTRUCTION CREW, THE PROJECT SITE WILL BE "POSTED" DURING THE CONSTRUCTION PERIOD.
6) CONSTRUCTION ACCESS TO THE MARSH COMPLEX WILL OCCUR ONLY IN THE LOCATIONS IDENTIFIED ON THE "PROPOSED RESTORATION PLAN"
7) EXISTING MOSQUITO DITCHES THAT ARE NOT PROPOSED TO BE REALIGNED MAY BE CLEANED OF SEDIMENT AND DEBRIS. THIS MATERIAL WOULD BE USED AS FILL.

LEGEND

- EXISTING MOSQUITO DITCH TO BE FILLED (±3,994 FT / ±1,332 YD)
- PROPOSED RUNNEL (±1,950 LF / ±650 YD)
- PROPOSED MICRO POOL (10 POOLS)
- EXISTING PHRAGMITIES
- EXISTING IVA / LOW PHRAG.
- EXISTING MARSH PAN AREAS
- ×1.00 EXISTING SPOT ELEVATION

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO 1-4728-05619/00001
DATE 4/13/18 CKW
1 of 6

AERIAL PHOTOGRAPHY FROM NYS ORTHOIMAGERY PROGRAM (2013) TOPOGRAPHIC INFORMATION FROM 2014 NOAA NGS TOPOBATHY LIDAR; POST SANDY. PANNE LOCATIONS FROM NPV STAFF OBSERVATIONS, DEM AND AERIAL INFORMATION. WETLAND VEGETATION FROM 2008 TIDAL WETLAND TREND ANALYSIS DATA AND SUPPLEMENTAL WITH NPV FIELD OBSERVATIONS.

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NO.	DATE:	REVISIONS:	BY:
2.	2-2-18	REVISED AS PER DEC AND FEMA COMMENTS	CCV
1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

P.E. SEAL AND SIGNATURE

PROPOSED MARSH RESTORATION
FOR
GARDINERS PARK WETLAND (EAST)

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	LU / TCD
DATE:	1-23-17
SCALE:	1" = 100'
FILE NO.:	-
CADD:	16154-GARDINERS-DEM-EA
DRAWING NO.:	C-101
SHEET NO.:	1 OF 3

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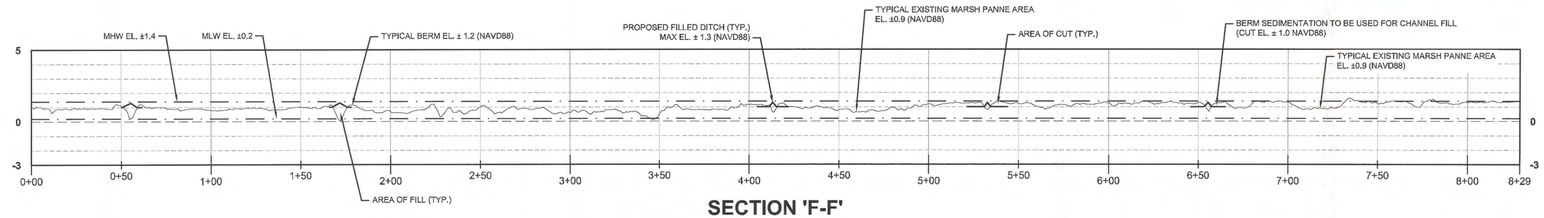
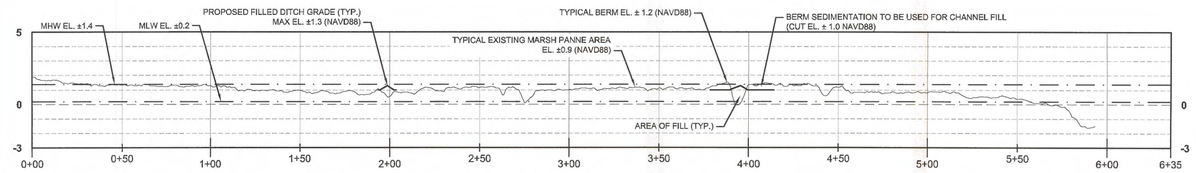


SECTION 'F-F'

SCALE: 1" = 40' (HORIZ.)
1" = 5' (VERT.)



SECTION 'E-E'

SCALE: 1" = 40' (HORIZ.)
1" = 5' (VERT.)

LEGEND

- EXISTING MOSQUITO DITCH TO BE FILLED (±3,994 FT / ±1,332 YD)
- PROPOSED RUNNEL (±1,950 LF / ±650 YD)
- PROPOSED MICRO POOL (10 POOLS)
- EXISTING PHRAGMITIES
- EXISTING IVA / LOW PHRAG.
- EXISTING MARSH PAN AREAS
- AREA OF PROPOSED BERM CUT FOR USE AS BORROW FILL (CUT EL. ± 1.0 NAVD88)
- ×1.00 EXISTING SPOT ELEVATION

EARTHWORK CALCULATIONS (EAST)

BASED ON DIGITAL TERRAIN MODELING UTILIZING THE NOAA POST SANDY LIDAR (2014) (NAVD 88) THE TOTAL VOLUME OF MATERIAL REQUIRED TO FILL THE EXISTING DITCHES (AS SHOWN) IS CALCULATED

FILL REQUIRED
VOLUME OF EXISTING DITCHES TO BE FILLED (SEE DETAILS FOR ELEVATIONS) : 506 CY OF FILL

REQUIRED FILL CAN BE GENERATED BY RELOCATION OF DITCH SIDE BERM SOIL (WHERE SUFFICIENT BUILDUP IS AVAILABLE), MICRO POOLS CONSTRUCTION OR IMPORT OF FILL.

REQUIRED FILL CAN BE REDUCED BY INSTALLING COIR LOGS IN DITCHES TO BE FILLED
A 12"Ø COIR LOG HAS A VOLUME OF 0.087 CY / YD
VOLUME REDUCTION: 1,332 YD x 0.087 CY / YD = 116 CY

REDUCED VOLUME OF FILL REQUIRED: 390 CY

BORROW AVAILABLE FROM AREAS OF CUT
TOTAL VOLUME OF MATERIAL AVAILABLE FROM ADJACENT BERMS: 594 CY
MATERIAL FROM MICRO POOLS: 2.55 CY / MICRO POOL x 10 POOLS = 25 CY
SAND FILL FROM MARSH CHANNEL: 100 CY
TOTAL AVAILABLE BORROW MATERIAL = 719 CY

CUT AND FILL CALCULATION
TOTAL REQUIRED FILL = 390 CY
TOTAL AVAILABLE BORROW =719 CY

CALCULATIONS PERFORMED SHOW TOTAL AVAILABLE BORROW FILL EXCEEDS THE REQUIRED FILL BY 329 CY. THE MATERIAL EXCAVATED FROM ADJACENT BERMS WILL BE ADJUSTED AS NECESSARY SO AS NOT EXCEED THE REQUIRED FILL VOLUME OF 390 CY.

NOTES:
1. VOLUME CALCULATIONS DEMONSTRATE AN APPROXIMATE VOLUME AND AREA OF EXCAVATION OF BERM (OR LEVIES) ADJACENT TO PROPOSED DITCHES TO BE FILLED.
2. THE CALCULATIONS ARE BASED ON A LEVEL CUT ABOVE ALL BERMS (WITHIN THE AREA SHOWN) TO AN ELEVATION OF ±1.0 (NAVD 88). DUE TO THE VARIABLE NATURE OF THE MARSH SYSTEM THESE AREAS OF CUT MAY VARY IN ELEVATION , HOWEVER THE TOTAL VOLUME OF REQUIRED FILL WILL REMAIN LESS THAN 1,500 CY MAX.

NYSDEC
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DATE _____ 2016

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1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

P.E. SEAL AND SIGNATURE

PROPOSED MARSH RESTORATION EARTHWORK ANALYSIS
FOR
GARDINERS PARK WETLAND (EAST)

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	LIJ / TCD
DATE:	1-23-17
SCALE:	1" = 100'
FILE NO.:	-
CADD:	16154-GARDINERS-DEM-EA
DRAWING NO.:	C-102
SHEET NO.:	2 OF 3

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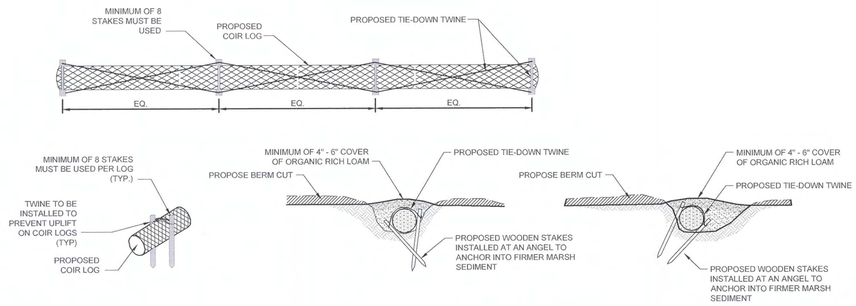


TYPICAL COIR LOG DETAIL

N.T.S.

COIR LOG SPECIFICATIONS

COIR LOGS SHALL BE 12-INCH, 16-INCH AND 20-INCH DIAMETER CYLINDRICAL MODULES OF COCONUT

FIBER ENCASED IN A HAND-KNOTTED COIR NETTING. EACH COIR LOG SHALL BE 10 FT IN LENGTH. THE OUTER NETTING OF THE COIR LOG SHALL BE CONSTRUCTED FROM 3-PLY HIGH **STRENGTH COIR TWINE OR YARN. THE NETTING SHALL HAVE 2" X 2" RHOMBIC OPENINGS WITH HAND-KNOTTED JUNCTIONS. THE INNER CORE SHALL BE 100% UNSORTED.** WELL-CLEANED, COCONUT FIBER UNIFORMLY DISTRIBUTED ALONG THE LENGTH OF THE LOG. THE STUFFED DENSITY OF THE COIR FIBER SHALL BE A MINIMUM OF 8 LBS/CU.FT. COCONUT FIBER SHALL BE OBTAINED FROM FRESHWATER CURED COCONUT HUSKS.

EACH COIR LOG SHALL HAVE HIGH STRENGTH COIR ROPE LOOPS ATTACHED TO BOTH ENDS. THE COIR ROPE LOOPS SHALL BE INTEGRALLY CONNECTED TO THE ENDS OF THE COIR LOGS IN A MANNER THAT DISTRIBUTES THE LOAD UNIFORMLY ACROSS THE OUTER COIR NETTING. THE COIR ROPE SHALL BE MADE FROM THREE 2-PLY COIR YARNS BRAIDED TOGETHER.

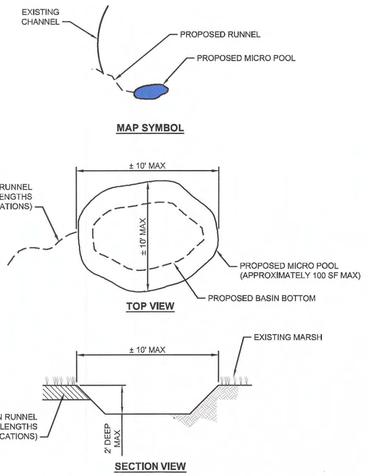
WOOD STAKES SHALL BE 2-INCH X 2-INCH, NOMINAL SIZE WITH PENCIL POINT ON ONE END AND SQUARE CUT AT THE OTHER END. TO ENSURE MINIMUM EMBEDMENT LENGTH INTO THE GROUND, THE STAKE LENGTH SHALL BE AS FOLLOWS DEPENDING ON THE SIZE OF THE COIR LOG:

COIR LOG SIZE	MINIMUM STAKE LENGTH
12" Ø	36"
16" Ø	40"
20" Ø	48"

COIR LOG INSTALLATION

COIR LOGS SHALL BE INSTALLED IN THE AREAS AS SHOWN ON THE PLANS. INSTALLATION SHALL FOLLOW THE STEPS OUTLINED BELOW AND AS DIRECTED BY THE ENVIRONMENTAL SUPERVISOR.

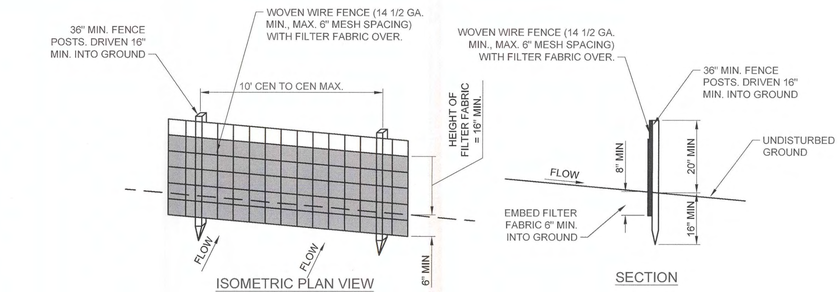
1. LOGS SHALL BE PLACED AS SHOWN ON THE PLANS. IMMEDIATELY STABILIZE ROLLS WITH WOOD STAKES AND COIR TWINE ACCORDING TO THE DETAILS SHOWN ON THE PLANS.
2. **PLACE WOOD STAKES ON BOTH SIDES ANGLED INWARD AS IF TO FORM AN "X" BELOW THE COIR LOG, ONE FOOT FROM EACH AND ONE MID LENGTH OR AT AN ANGEL TO ANCHOR INTO FIRMER MARSH SEDIMENT AS SHOWN ABOVE. SECURE AND TIE** COIR TWINE TIGHTLY ACROSS EACH ROLL. THE TWINE SHOULD BE WOUND AROUND EACH STAKE AND OVER EACH ROLL SO THAT EACH TIED SECTION HAS A MINIMUM OF 4 STRANDS OF TWINE SECURING THE ROLL DOWN. ONCE THE TWINE IS TIED TIGHTLY, DRIVE STAKES TO THE FINAL DEPTH SO THAT TOP OF THE STAKE IS BELOW TOP OF THE LOGS. FOUR SETS OF STAKES WILL BE INSTALLED PER 10FOOT COIR LOG.
3. ENDS OF ADJACENT LOGS SHALL BE TIED TOGETHER WITH COIR TWINE. AT LEAST 3 PASSES WITH THE TWINE SHALL BE MADE IN THE END NETTING BETWEEN ADJACENT LOGS.
4. THE ENVIRONMENTAL SUPERVISOR MAY REQUIRE ADJUSTMENTS IN THE STAKING AND/OR TYING REQUIREMENTS TO FIT INDIVIDUAL SITE CONDITIONS.



PROPOSED MICRO POOL DETAIL

NTS

NOTE:
1. MICRO POOLS ARE CREATED TO PROVIDE FISH HABITAT FOR BIOLOGICAL MOSQUITO CONTROL.
2. LOCATIONS OF POOLS ARE TO BE WITHIN AREAS OF PHRAGMITES OR EXISTING WATER LOGGED AREAS THAT ARE DEVOID OF NATURAL VEGETATION.

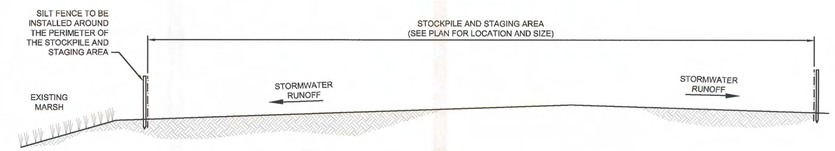


SILT FENCE DETAIL

NOT TO SCALE

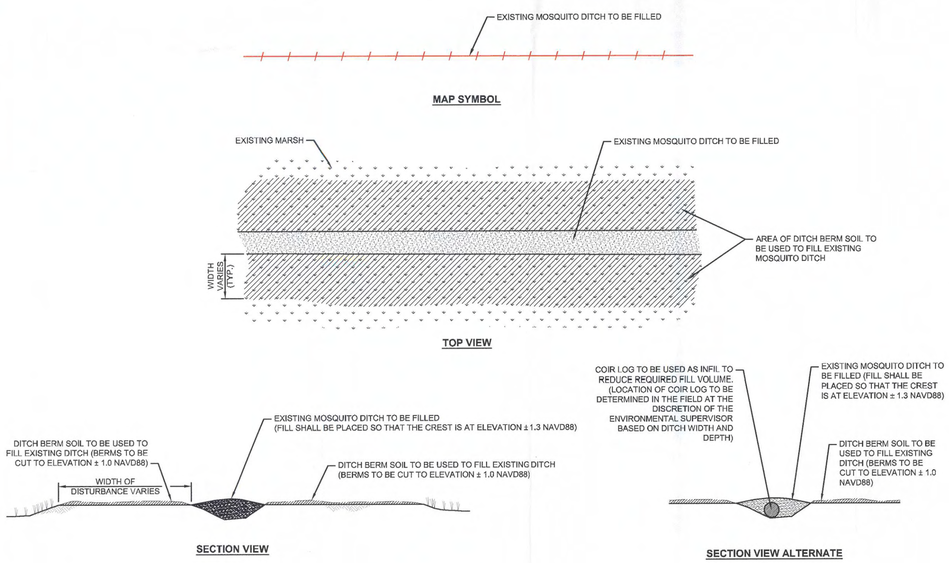
NOTES
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
5. POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD.
6. FENCE: WOVEN WIRE, 14 1/2 GA. 6" MAX.MESH OPENING.
7. FILTER CLOTH SHALL BE A WOVEN GEOTEXTILE COMPOSED OF POLYPROPYLENE CONFORMING TO AASHTO M288.

STANDARD SYMBOL
—— SF ——



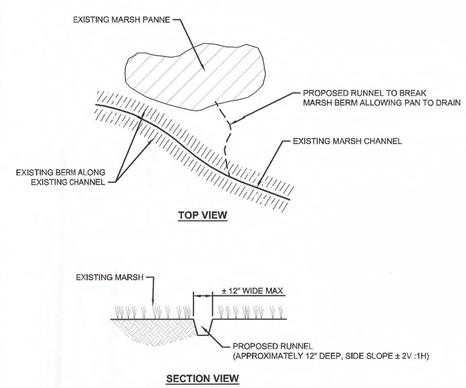
PROPOSED STAGING AND STOCKPILE AREA DETAIL

NTS



PROPOSED DITCH FILL DETAIL

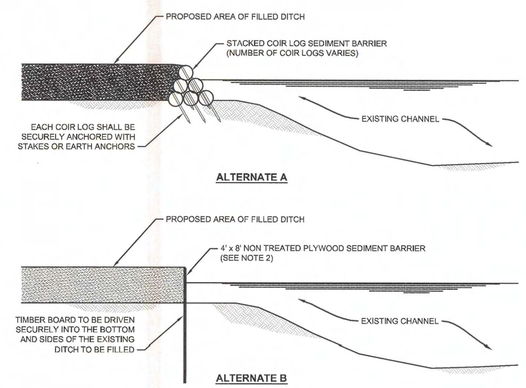
NTS



PROPOSED RUNNEL DETAIL

NTS

NOTES:
1. RUNNELS ARE PROPOSED TO BE CONSTRUCTED BOTH BY HAND AND BY MACHINE.
2. MATERIAL REMOVAL FROM RUNNEL CONSTRUCTION PERFORMED BY MACHINERY IS NEGLIGIBLE AND/OR BROADCAST IN THE AREA OF WORK. THEREFORE IT WILL NOT BE USED AS PROPOSED FILL.
3. MACHINE CONSTRUCTION RUNNEL IS A "V" SHAPED CROSS SECTION THAT MEETS THE DIMENSIONS SHOWN IN THE DETAIL.



SEDIMENT BARRIER DETAIL

NTS

NOTE: SEDIMENT BARRIER IS TO BE USED TO TERMINATE A DITCH FILLING OPERATION AND PREVENT THE LOSS OF FILL SEDIMENT.

N Y S D E C
APPROVED AS PER TERMS AND CONDITIONS OF
PERMIT NO _____
DATE 3 of 6

NO.	DATE:	REVISIONS:	BY:
2.	2-2-18	REVISED AS PER DEC AND FEMA COMMENTS	CCV
1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

P.E. SEAL AND SIGNATURE

PROPOSED MARSH RESTORATION DETAILS
FOR
GARDINERS PARK WETLAND (EAST)

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	LU / TCD
DATE:	1-23-17
SCALE:	AS SHOWN
FILE NO.:	-
CADD:	16154-DET
DRAWING NO.:	C-501
SHEET NO.:	3 OF 3

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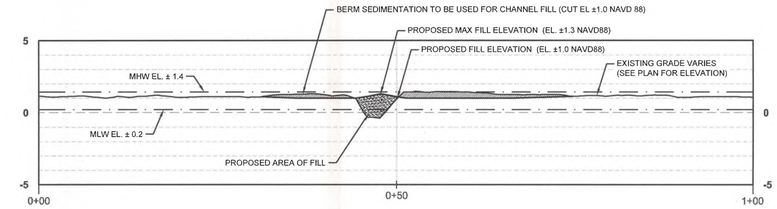
± 2,140 FT

SITE ACCESS SHALL TAKE PLACE AT VARIOUS LOCATIONS ALONG THE EXISTING PATH



SECTION 'A-A'

SCALE: 1" = 10' (HORIZ.)
1" = 5' (VERT.)

GENERAL NOTES:

1) TO THE GREATEST EXTENT PRACTICAL, CONSTRUCTION VEHICLES AND CONSTRUCTION CREWS WILL AVOID TRAVERSING THE SAME PATH TO REDUCE THE COMPACTION WITHIN THE MARSH
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4) IN ORDER TO LIMIT DISTURBANCE TO DESIRABLE MARSH VEGETATION, PROPOSED MICROPOOLS WILL BE LOCATED WITHIN EXISTING PANNES OR MONOCULTURES OF INVASIVE *PHRAGMITES AUSTRALIS* WHEREVER POSSIBLE.
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6) CONSTRUCTION ACCESS TO THE MARSH COMPLEX WILL OCCUR ONLY IN THE LOCATIONS IDENTIFIED ON THE "PROPOSED RESTORATION PLAN"
7) EXISTING MOSQUITO DITCHES THAT ARE NOT PROPOSED TO BE REALIGNED MAY BE CLEANED OF SEDIMENT AND DEBRIS. THIS MATERIAL WOULD BE USED AS FILL.

LEGEND

- EXISTING MOSQUITO DITCH TO BE FILLED (±6,770 FT / ±2,256 CY)
- PROPOSED RUNNEL (±3,243 LF / ±1,081 YD)
- PROPOSED MICRO POOL (22)
- EXISTING PHRAGMITIES
- EXISTING IVA / LOW PHRAG.
- EXISTING MARSH PAN AREAS
- ×1.00 EXISTING SPOT ELEVATION

NYSDEC
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PERMIT NO. 4 of 6
DATE CKW

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1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

P.E. SEAL AND SIGNATURE

PROPOSED MARSH RESTORATION
FOR
GARDINERS PARK WETLAND (~~WEST~~)

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
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PROJECT NO.:	16154
DRAWN BY:	CCV
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DATE:	1-23-17
SCALE:	1" = 100'
FILE NO.:	-
CADD:	16154-GARDINERS-DEM-EA
DRAWING NO.:	C-101
SHEET NO.:	1 OF 3

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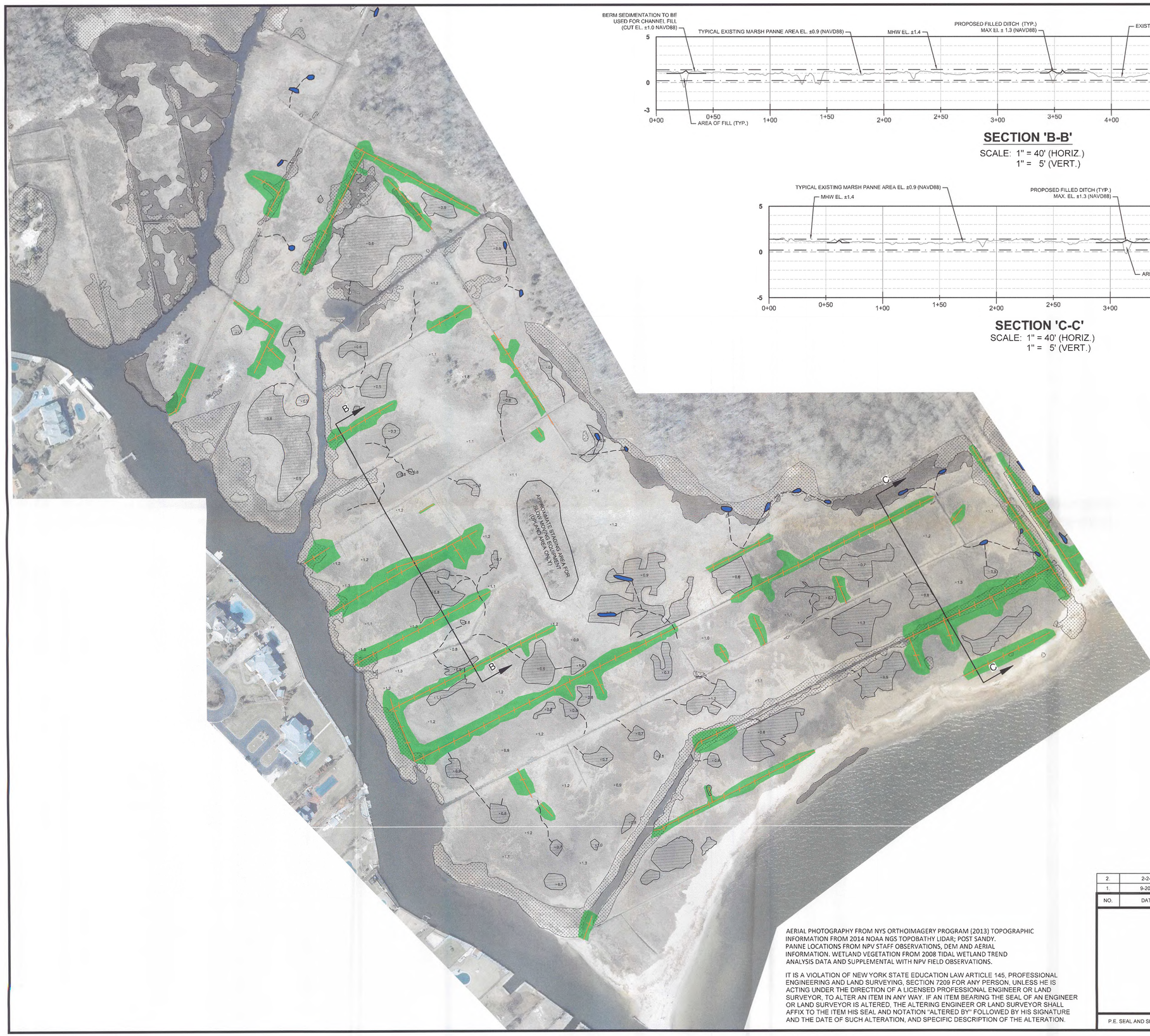
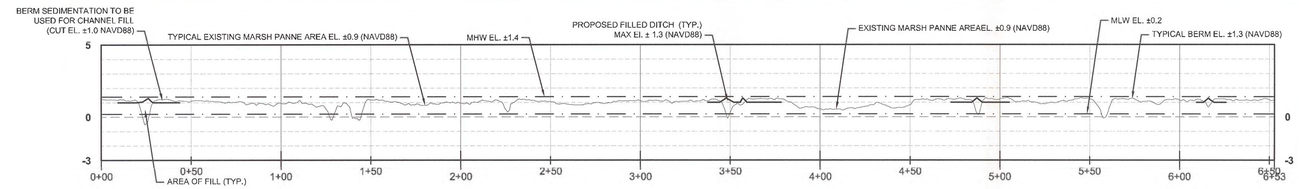
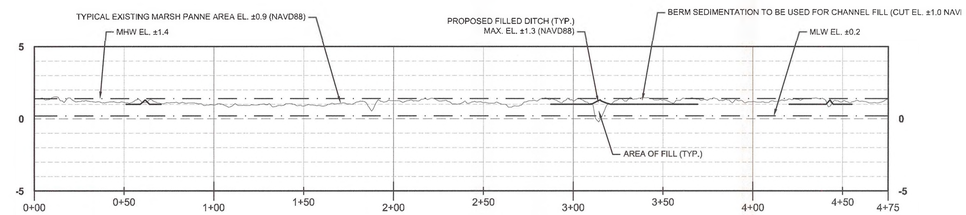




SECTION 'B-B'

SCALE: 1" = 40' (HORIZ.)
1" = 5' (VERT.)



SECTION 'C-C'

SCALE: 1" = 40' (HORIZ.)
1" = 5' (VERT.)

EARTHWORK CALCULATIONS (WEST)

BASED ON DIGITAL TERRAIN MODELING UTILIZING THE NOAA POST SANDY LIDAR (2014) (NAVD 88) THE TOTAL VOLUME OF MATERIAL REQUIRED TO FILL THE EXISTING DITCHES (AS SHOWN) IS CALCULATED.

FILL REQUIRED
VOLUME OF EXISTING DITCHES TO BE FILLED (SEE DETAILS FOR ELEVATIONS): 1,189 CY OF FILL

REQUIRED FILL CAN BE GENERATED BY RELOCATION OF DITCH SIDE BERM SOIL (WHERE SUFFICIENT BUILDUP IS AVAILABLE), MICRO POOLS CONSTRUCTION OR IMPORT OF FILL.

REQUIRED FILL CAN BE REDUCED BY INSTALLING COIR LOGS IN DITCHES TO BE FILLED
A 12"Ø COIR LOG HAS A VOLUME OF 0.087 CY / YD
VOLUME REDUCTION: 2,256 YD x 0.087 CY / YD = 196 CY

REDUCED VOLUME OF FILL REQUIRED: 993 CY

BORROW AVAILABLE FROM AREAS OF CUT
TOTAL VOLUME OF MATERIAL AVAILABLE FROM ADJACENT BERMS: 1,182 CY
MATERIAL FROM MICRO POOLS: 2.55 CY / MICRO POOL x 22 POOLS = 56 CY
TOTAL AVAILABLE BORROW MATERIAL = 1,238 CY

CUT AND FILL CALCULATION
TOTAL REQUIRED FILL = 993 CY
TOTAL AVAILABLE BORROW = 1,238 CY

CALCULATIONS PERFORMED SHOW TOTAL AVAILABLE BORROW FILL EXCEEDS THE REQUIRED FILL BY 245 CY. THE MATERIAL EXCAVATED FROM ADJACENT BERMS WILL BE ADJUSTED AS NECESSARY SO AS NOT EXCEED THE REQUIRED FILL VOLUME OF 993 CY.

NOTES:
1. VOLUME CALCULATIONS DEMONSTRATE AN APPROXIMATE VOLUME AND AREA OF EXCAVATION OF BERM (OR LEVIES) ADJACENT TO PROPOSED DITCHES TO BE FILLED.
2. THE CALCULATIONS IS BASED ON A LEVEL CUT OF ALL BERMS (WITHIN THE AREA SHOWN) TO AN ELEVATION OF ±1.0' (NAVD 88). DUE TO THE VARIABLE NATURE OF THE MARSH SYSTEM THESE AREAS AND CUT ELEVATION MAY VARY, HOWEVER THE TOTAL VOLUME OF REQUIRED FILL WILL REMAIN LESS THAN 1,500 CY MAX.

LEGEND

- EXISTING MOSQUITO DITCH TO BE FILLED (±6,770 FT / ±2,256 CY)
- PROPOSED RUNNEL (±3,243 LF / ±1,081 YD)
- PROPOSED MICRO POOL (22)
- EXISTING PHRAGMITIES
- EXISTING IVA / LOW PHRAG.
- EXISTING MARSH PAN AREAS
- AREA OF PROPOSED BERM CUT FOR USE AS BORROW FILL (CUT EL. ±1.0 NAVD88)
- ×1.00 EXISTING SPOT ELEVATION

NYSDEC
APPROVED AS PER TERMS AND CONDITIONS OF
PERMIT NO. _____
DATE 5-8-16

AERIAL PHOTOGRAPHY FROM NYS ORTHOIMAGERY PROGRAM (2013) TOPOGRAPHIC INFORMATION FROM 2014 NOAA NGS TOPOBATHY LIDAR; POST SANDY. PANNE LOCATIONS FROM NPV STAFF OBSERVATIONS, DEM AND AERIAL INFORMATION. WETLAND VEGETATION FROM 2008 TIDAL WETLAND TREND ANALYSIS DATA AND SUPPLEMENTAL WITH NPV FIELD OBSERVATIONS.

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 145, PROFESSIONAL ENGINEERING AND LAND SURVEYING, SECTION 7209 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND SPECIFIC DESCRIPTION OF THE ALTERATION.

NO.	DATE:	REVISIONS:	BY:
2.	2-2-18	REVISED AS PER DEC AND FEMA COMMENTS	CCV
1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

P.E. SEAL AND SIGNATURE

PROPOSED MARSH RESTORATION EARTHWORK ANALYSIS
FOR
GARDINERS PARK WETLAND (WEST)

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	LU / TCD
DATE:	1-23-17
SCALE:	1" = 100'
FILE NO.:	-
CADD:	16154-GARDINERS-DEM-EA
DRAWING NO.:	C-102
SHEET NO.:	2 OF 3

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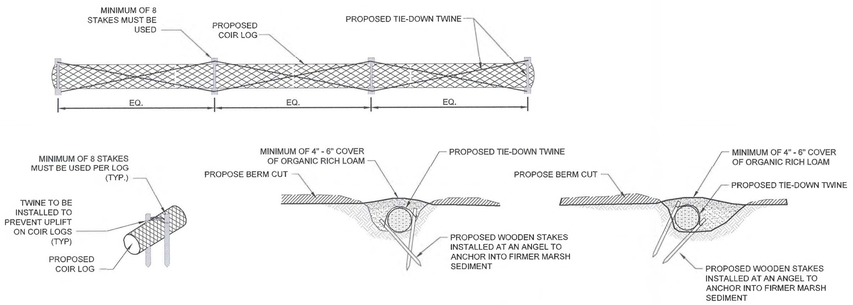


TYPICAL COIR LOG DETAIL

N.T.S.

COIR LOG SPECIFICATIONS

COIR LOGS SHALL BE 12-INCH, 16-INCH AND 20-INCH DIAMETER CYLINDRICAL MODULES OF COCONUT

FIBER ENCASED IN A HAND-KNOTTED COIR NETTING. EACH COIR LOG SHALL BE 10 FT IN LENGTH. THE OUTER NETTING OF THE COIR LOG SHALL BE CONSTRUCTED FROM 3-PLY HIGH STRENGTH COIR TWINE OR YARN. THE NETTING SHALL HAVE 2" X 2" RHOMBIC OPENINGS WITH HAND-KNOTTED JUNCTIONS. THE INNER CORE SHALL BE 100% UNSORTED, WELL-CLEANED, COCONUT FIBER UNIFORMLY DISTRIBUTED ALONG THE LENGTH OF THE LOG. THE STUFFED DENSITY OF THE COIR FIBER SHALL BE A MINIMUM OF 8 LBS/CU.FT. COCONUT FIBER SHALL BE OBTAINED FROM FRESHWATER CURED COCONUT HUSKS.

EACH COIR LOG SHALL HAVE HIGH STRENGTH COIR ROPE LOOPS ATTACHED TO BOTH ENDS. THE COIR ROPE LOOPS SHALL BE INTEGRALLY CONNECTED TO THE ENDS OF THE COIR LOGS IN A MANNER THAT DISTRIBUTES THE LOAD UNIFORMLY ACROSS THE OUTER COIR NETTING. THE COIR ROPE SHALL BE MADE FROM THREE 2-PLY COIR YARNS BRAIDED TOGETHER.

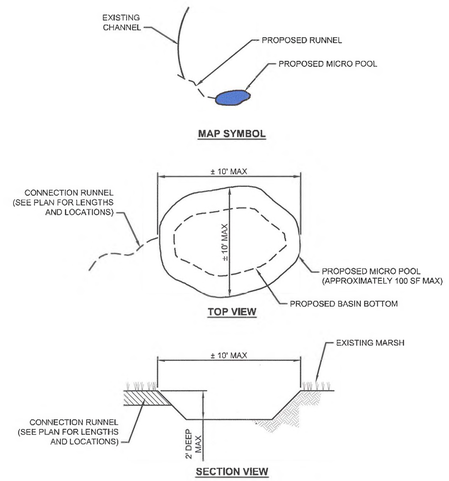
WOOD STAKES SHALL BE 2-INCH X 2-INCH, NOMINAL SIZE WITH PENCIL POINT ON ONE END AND SQUARE CUT AT THE OTHER END. TO ENSURE MINIMUM EMBEDMENT LENGTH INTO THE GROUND, THE STAKE LENGTH SHALL BE AS FOLLOWS DEPENDING ON THE SIZE OF THE COIR LOG:

COIR LOG SIZE	MINIMUM STAKE LENGTH
12" Ø	36"
16" Ø	40"
20" Ø	48"

COIR LOG INSTALLATION

COIR LOGS SHALL BE INSTALLED IN THE AREAS AS SHOWN ON THE PLANS. INSTALLATION SHALL FOLLOW THE STEPS OUTLINED BELOW AND AS DIRECTED BY THE ENVIRONMENTAL SUPERVISOR.

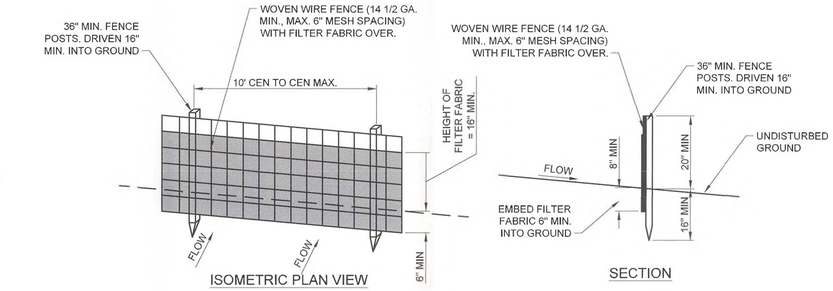
1. LOGS SHALL BE PLACED AS SHOWN ON THE PLANS. IMMEDIATELY STABILIZE ROLLS WITH WOOD STAKES AND COIR TWINE ACCORDING TO THE DETAILS SHOWN ON THE PLANS.
2. PLACE WOOD STAKES ON BOTH SIDES ANGLED INWARD AS IF TO FORM AN "X" BELOW THE COIR LOG, ONE FOOT FROM EACH AND ONE MID LENGTH OR AT AN ANGEL TO ANCHOR INTO FIRMER MARSH SEDIMENT AS SHOWN ABOVE. SECURE AND TIE COIR TWINE TIGHTLY ACROSS EACH ROLL. THE TWINE SHOULD BE WOUND AROUND EACH STAKE AND OVER EACH ROLL SO THAT EACH TIED SECTION HAS A MINIMUM OF 4 STRANDS OF TWINE SECURING THE ROLL DOWN. ONCE THE TWINE IS TIED TIGHTLY, DRIVE STAKES TO THE FINAL DEPTH SO THAT TOP OF THE STAKE IS BELOW TOP OF THE LOGS. FOUR SETS OF STAKES WILL BE INSTALLED PER 10FOOT COIR LOG.
3. ENDS OF ADJACENT LOGS SHALL BE TIED TOGETHER WITH COIR TWINE. AT LEAST 3 PASSES WITH THE TWINE SHALL BE MADE IN THE END NETTING BETWEEN ADJACENT LOGS.
4. THE ENVIRONMENTAL SUPERVISOR MAY REQUIRE ADJUSTMENTS IN THE STAKING AND/OR TYING REQUIREMENTS TO FIT INDIVIDUAL SITE CONDITIONS.



PROPOSED MICRO POOL DETAIL

NTS

NOTE:
1. MICRO POOLS ARE CREATED TO PROVIDE FISH HABITAT FOR BIOLOGICAL MOSQUITO CONTROL.
2. LOCATIONS OF POOLS ARE TO BE WITHIN AREAS OF PHRAGMITES OR EXISTING WATER LOGGED AREAS THAT ARE DEVOID OF NATURAL VEGETATION.



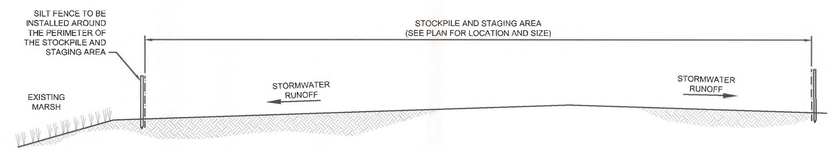
SILT FENCE DETAIL

NOT TO SCALE

NOTES

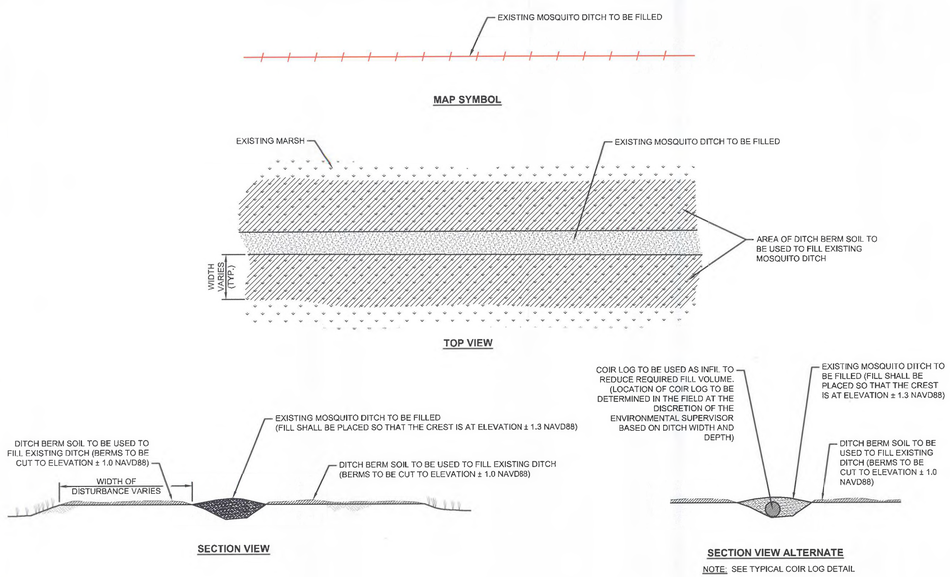
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
5. POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD.
6. FENCE: WOVEN WIRE, 14 1/2 GA. 6" MAX.MESH OPENING.
7. FILTER CLOTH SHALL BE A WOVEN GEOTEXTILE COMPOSED OF POLYPROPYLENE CONFORMING TO AASHTO M288.

STANDARD SYMBOL
——— SF ———



PROPOSED STAGING AND STOCKPILE AREA DETAIL

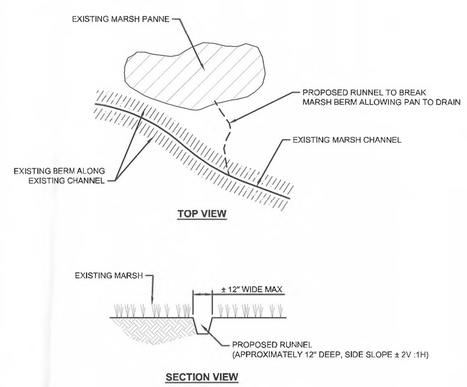
NTS



NOTE: SEE TYPICAL COIR LOG DETAIL

PROPOSED DITCH FILL DETAIL

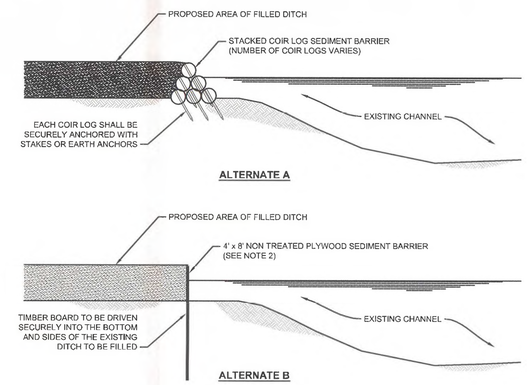
NTS



PROPOSED RUNNEL DETAIL

NTS

NOTES:
1. RUNNELS ARE PROPOSED TO BE CONSTRUCTED BOTH BY HAND AND BY MACHINE.
2. MATERIAL REMOVAL FROM RUNNEL CONSTRUCTION PERFORMED BY MACHINERY IS NEGLIGIBLE AND/OR BROADCAST IN THE AREA OF WORK, THEREFORE IT WILL NOT BE USED AS PROPOSED FILL.
3. MACHINE CONSTRUCTION RUNNEL IS A "V" SHAPED CROSS SECTION THAT MEETS THE DIMENSIONS SHOWN IN THE DETAIL.



SEDIMENT BARRIER DETAIL

NTS

NOTE: SEDIMENT BARRIER IS TO BE USED TO TERMINATE A DITCH FILLING OPERATION AND PREVENT THE LOSS OF FILL SEDIMENT.

NYSDEC APPROVED AS PER TERMS AND CONDITIONS OF
PERMIT NO _____
DATE _____

NO.	DATE:	REVISIONS:	BY:
2.	2-2-18	REVISED AS PER DEC AND FEMA COMMENTS	CCV
1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

P.E. SEAL AND SIGNATURE

PROPOSED MARSH RESTORATION DETAILS
FOR
GARDINERS PARK WETLAND (WEST)

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	LU / TCD
DATE:	1-23-17
SCALE:	AS SHOWN
FILE NO.:	-
CADD:	16154-DET
DRAWING NO.:	C-501
SHEET NO.:	3 OF 3

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NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

January 23, 2017

Mr. Roger Evans, Permit Administrator
New York State Department of Environmental Conservation
SUNY at Stony Brook
50 Circle Road
Stony Brook, NY 11790

Re: Article 25 Permit
Timber Point
SCTM# 0500-45100-100-2000
NP&V #16154

Dear Roger:

Nelson, Pope & Voorhis (NP&V)/Nelson & Pope (N&P) has been retained by Suffolk County Department of Public Works, Division of Vector Control (c/o Tom Iwanejko) to obtain the necessary permits for the improvements proposed at the above referenced site. The proposed project involves the restoration of marsh habitat and associated reduction of mosquito breeding areas through the use of integrated marsh management techniques.

Timber Point is the site of historic grid ditching which has contributed to the long-term degradation of the marsh system. When originally constructed, the linear ditches were arbitrarily placed and consideration was not given to the typical scour and sediment deposition processes that occurs along a naturally flowing channel. The linear ditches run perpendicular or parallel to each other and create small panels between the grid-like ditches. As a result, a significant loss in marsh habitat has occurred at this site. In addition to the marsh loss, berms have formed along the edges of the ditches contributing to the change in the tidal flow through the marsh system, and ultimately creating ideal mosquito breeding habitat. The proposed project seeks to return the marsh to a more natural system to ameliorate the impacts the marsh has experienced over time.

The project consists of five main components; removal of material from the existing berms and utilization of that material in the filling of historic grid ditching, the creation of runnels, naturalization of channels and the creation of micro-pools. The project proposes filling of approximately 9,031 linear feet (FT) of existing mosquito ditches. To fill these ditches, material from the berms located along the banks of the ditches will be utilized. Capturing material from the berms will help create a more level marsh surface that more closely resembles natural conditions. Revegetation across the filled ditches and in the disturbed area associated with berm removal will occur naturally from existing seed stock present in the soil and through encroachment from the vegetation along the edges of the disturbance. Coir logs will be utilized to help fill the mosquito ditches, as sufficient volume to fill the ditches is not available within the berms. coir logs are biodegradable coconut fiber rolls that can be placed in the existing mosquito ditches, secured and covered with material captured from the berms. It is expected that the coir logs will slowly degrade and be replaced by sediment over time through natural sediment deposition processes that occur within the marsh system.

Narrow, shallow channels (called runnels) are proposed to connect existing pannes to the naturalized channels. This will allow the standing water to drain from pannes and prevent future standing water from occurring in the existing depressions. Once standing water is no longer present, it is anticipated that natural sediment deposition and associated revegetation of the pannes will occur in subsequent growing seasons.

The majority of the remaining ditches will be naturalized in order to achieve a function that more closely mimics natural marsh conditions. Naturalized channels will utilize the same general layout of the remaining mosquito ditches, however, they will be altered to create more meandering channels to aid in slowing the water velocity within the ditches during tide inflow and outflow. As illustrated on the Proposed Marsh Restoration Details, ditch berm soil will be moved from the berm to the inner bank of the existing ditch in select locations. This will create small curves throughout the existing ditch that mimics natural channel conditions. It is expected that scour will occur on the outside of the curve created within the ditch and sediment deposition will occur on the inside of the created curve. This will prevent sediment from gathering on top of the banks of the channel and creating new berms, which currently exacerbates marsh loss. Approximately ±4,088 LF of naturalized channel will be created through the re-alignment of ±2,200 FT of existing mosquito ditches.

Finally, 9 micropools will be created in the marsh. At a maximum, micropools will be 10' x 5 x 2'. Micropools are designed to create fish habitat within the marsh and will be located in areas where Suffolk County Department of Public Works, Division of Vector Control, has detected mosquito larvae. The proposed micropools will be connected to tidal flow through runnels. Fish are natural predators of mosquitos and the creation of fish habitat in these areas is expected to reduce the overall mosquito population. Furthermore, as these areas are dominated by the invasive reed *Phragmites australis,* the creation of micropools will have limited disturbance to desirable marsh vegetation.

Low ground pressure (<2 psi) machinery will be utilized during construction in order to minimize the impact to the existing healthy marsh areas. Construction access will be from the existing adjacent golf course, and all staging and equipment storage will occur in the upland area.

I have enclosed all of the required application materials for your review:

1. Joint Application Form and Short EAF.
2. Project Narrative
3. $900 Permit Application Fee
4. Letter of Authorization from Suffolk County DPW and NYSDEC
5. Two (2) copies of the Location map
6. Photographs of existing conditions with reference aerial photograph
7. Copy of the NYSDEC Tidal Wetlands Map
8. Four (4) copies of the Proposed Marsh Restoration Plan

Please let me know if you need any additional information, and do not hesitate to call should you have any questions. Thank you.

Sincerely,

NELSON, POPE & VOORHIS, LLC

Hannah Emouna
Environmental Scientist

cc: Tom Iwanejko, SCDPW
File

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 1
SUNY @ Stony Brook, 50 Circle Road, Stony Brook, NY 11790
P: (631) 444-0365 I F: (631) 444-0360
www.dec.ny.gov

RECEIVED
APR 25 2018
NELSON & POPE

April 13, 2018

Suffolk County DPW- Vector Control
Attn: Tom Iwanejko
335 Yaphank Avenue
Yaphank, NY 11980

RE: Permit No.: 1-4728-00556/00060
Timber Point County Park

Dear Permittee:

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your permit for the referenced activity. Please carefully read all permit conditions and special permit conditions contained in the permit to ensure compliance during the term of the permit. If you are unable to comply with any conditions, please contact us at the above address.

Also enclosed is a permit sign which is to be conspicuously posted at the project site and protected from the weather and a Notice of Commencement/Completion of Construction. Please note, the permit sign and Notice of Commencement/Completion of Construction form are sent to either the permittee or the facility application contact, not both.

Sincerely,

Claire Werner

Claire Werner
Environmental Analyst II

cc: Nelson, Pope & Voorhis, LLC
A. Fournier, Marine Resources
BMHP
BOH
File

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
SUFFOLK COUNTY

H LEE DENNISON BLDG
HAUPPAUGE, NY 11788

Facility:
TIMBER POINT COUNTY PARK & POLICE MARINE BUREAU
150 RIVER RD|SCTM# 500-451-01-01
GREAT RIVER, NY 11739

Facility Application Contact:
NELSON POPE & VOORHIS LLC
572 WALT WHITMAN RD
MELVILLE, NY 11747
(631) 427-5665

Facility Permit Contact:
SUFFOLK COUNTY DPW
335 YAPHANK AVE
YAPHANK, NY 11980
(631) 852-4002

Facility Location: in ISLIP in SUFFOLK COUNTY
Facility Principal Reference Point: NYTM-E: 657 NYTM-N: 4509.6
Latitude: 40°43'20.5" Longitude: 73°08'27.7"
Project Location: Timber Point County Park, River Road Watercourse: Great South Bay
Authorized Activity: Conduct marsh restoration activities which include improving the existing degraded marsh ditch features by strategically filling them with local material and coir logs and creating naturalized tidal channels to improve tidal exchange between the bay and the marsh interior. Create micropools connected to tidal channels to enhance natural conditions and to control marsh mosquito species. All authorized activities must be in strict conformance with the attached 3 page "Construction Protocols and Best Management Practices" and plans (3 sheets) prepared by Nelson & Pope, last revised 2/2/18, all stamped NYSDEC approved on 4/13/18. (CKW)

Permit Authorizations

Tidal Wetlands - Under Article 25
Permit ID 1-4728-00556/00060
New Permit Effective Date: 4/13/2018 Expiration Date: 4/12/2023
Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 1-4728-00556/00061
New Permit Effective Date: 4/13/2018 Expiration Date: 4/12/2023
Excavation & Fill in Navigable Waters - Under Article 15, Title 5
Permit ID 1-4728-00556/00062
New Permit Effective Date: 4/13/2018 Expiration Date: 4/12/2023
Freshwater Wetlands - Under Article 24
Permit ID 1-4728-00556/00063
New Permit Effective Date: 4/13/2018 Expiration Date: 4/12/2023

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: ROGER EVANS, Regional Permit Administrator
Address: NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY 11790 -3409

Authorized Signature: Roger Evans Date 4 / 19 /2018

Distribution List

NELSON POPE & VOORHIS LLC
SUFFOLK COUNTY DPW
ALEXA FOURNIER
Bureau of Marine Habitat Protection
Habitat
CLAIRE K WERNER

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: TIDAL WETLANDS; WATER QUALITY CERTIFICATION; EXCAVATION & FILL IN NAVIGABLE WATERS; FRESHWATER WETLANDS

1. **Post Permit Sign** The permit sign enclosed with this permit shall be posted in a conspicuous location on the worksite and adequately protected from the weather.

2. **Notice of Commencement** At least 48 hours prior to commencement of the project, the permittee and contractor shall sign and return the top portion of the enclosed notification form certifying that they are fully aware of and understand all terms and conditions of this permit. Within 30 days of completion of project, the bottom portion of the form must also be signed and returned, along with photographs of the completed work.

3. **Cooperative Agreement** Regulated activities shall not commence until the Permittee has entered into a Cooperative Agreement with NYSDEC's Division of Marine Resources. Contact is:

Dawn McReynolds
Bureau Chief, Marine Habitat
Division of Marine Resources
205 N. Belle Mead Rd.
East Setauket, NY 11733
(631) 444-0452

4. **Vegetation Cutting Restriction** No cutting of any woody vegetation upslope of the tidal wetland boundary for the purposes of access or staging is permitted.

5. **No Construction Debris in Wetland or Adjacent Area** Any debris or excess material from construction of this project shall be completely removed from the adjacent area (upland) and removed to an approved upland area for disposal. No debris is permitted in wetlands and/or protected buffer areas.

6. **Storage of Equipment, Materials** The storage of construction equipment and materials shall be confined as per the approved protocol.

7. **Disposal Locations** All excavated material shall be appropriately disposed of as per the project plan with minimal disturbance and/or impact to vegetated marsh areas. Disposal of excess material beyond the approved project site will require further written approval from the Department (permit, modification, amendment).

8. **Low Ground Pressure Equipment** All ground and heavy equipment used for this project shall be low ground pressure equipment with a ground pressure of 2 psi or less on the marsh surface. Storage of equipment and materials when not in operation, shall be limited to upland areas of the project, or on **the marsh surface only if marsh mats or plywood are used.**

9. **Fueling Areas** Fueling of equipment is strictly prohibited within tidal wetlands and within 100 feet of the tidal wetland boundary. Fueling areas must be approved by the department and contained by haybales or other approved containment devices. Spills must be prevented from entering tidal wetlands and/or waterways. Should a spill occur, the permittee shall notify the office of Regional Habitat - TW immediately and shall provide a plan for containment, clean-up and restoration of the impacted area for the approval of the department.

10. **Work During Winter** Use of heavy equipment and marsh/ditch excavation are limited to the winter months (December 1 to April 30, inclusive) to minimize impacts to existing marsh vegetation.

11. Activities Consistent with Approved Plans All activities and marsh alterations must be consistent with the approved plan. Activities or alterations beyond the scope of the approved project and/or not explicitly authorized by the permit will require further written approval of the Regional Habitat - TW office prior to commencement.

12. Annual Monitoring Report The permittee must submit a written report of annual monitoring efforts, data and analysis by January 30 of each year for the approval of the Regional Habitat - TW office. Data collection efforts will be consistent with the approved monitoring plan. Any changes to approved monitoring protocols will require the written approval of the Regional Habitat Manager.

13. Work All work shall be done under the direct supervision of an Environmental Supervisor, as described in the approved Construction Protocols and Best Management Practices, attached.

14. No Interference With Navigation There shall be no unreasonable interference with navigation by the work herein authorized.

15. State May Order Removal or Alteration of Work If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

16. State May Require Site Restoration If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

17. Precautions Against Contamination of Waters All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

18. Conformance With Plans All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by Nelson & Pope, (3 sheets) last revised 2/2/18 and attached 3 page "Construction Protocols and Best Management Practices", all stamped NYSDEC approved on 4/13/18.

19. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

2. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY11790 -3409

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Excavation & Fill in Navigable Waters, Freshwater Wetlands, Tidal Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

NOTICE OF COMMENCEMENT OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE Or Fax to: 631-444-0297
Bureau of Marine Habitat Protection - NYSDEC
50 Circle Road
Stony Brook, NY 11790-3409

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS: _____

_____ TELEPHONE: _____

Dear Sir: _____

Pursuant to the special conditions of the referenced permit, you are hereby notified that the authorized activity shall commence on _____ . We certify that we have read the referenced permit and approved plans and fully understand the authorized project and all permit conditions. We have inspected the project site and can complete the project as described in the permit and as depicted on the approved plans. We can do so in full compliance with all plan notes and permit conditions. The permit, permit sign, and approved plans will be available at the site for inspection in accordance with General Condition No. 1. (Both signatures required)

PERMITEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE MUST BE SENT TO THE ABOVE ADDRESS AT LEAST TWO DAYS PRIOR TO COMMENCEMENT OF THE PROJECT AND /OR ANY ASSOCIATED ACTIVITIES. FAILURE TO RETURN THIS NOTICE, POST THE PERMIT SIGN, OR HAVE THE PERMIT AND APPROVED PLANS AVAILABLE AT THE WORK SITE FOR THE DURATION OF THE PROJECT MAY SUBJECT THE PERMITTEE AND/OR CONTRACTOR TO APPLICABLE SANCTIONS AND PENALTIES FOR NON-COMPLIANCE WITH PERMIT CONDITIONS.

Cut along this line X X X X X X X

NOTICE OF COMPLETION OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE Or Fax to: 631-444-0297
Bureau of Marine Habitat Protection - NYSDEC
50 Circle Rd.
Stony Brook, NY 11790-3409

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS:

_____

_____ TELEPHONE: _____

Pursuant to special conditions of the referenced permit, you are hereby notified that the authorized activity was completed on _____ We have fully complied with the terms and conditions of the permit and approved plans. (Both signatures required)

PERMITEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE, WITH PHOTOGRAPHS OF THE COMPLETED WORK AND/OR A COMPLETED SURVEY, AS APPROPRIATE, MUST BE SENT TO THE ABOVE ADDRESS WITHIN 30 DAYS OF COMPLETION OF THE PROJECT.

NOTICE OF COMMENCEMENT OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE **Or Fax to:** 631-444-0272
Bureau of Habitat-Freshwater Wetlands - NYSDEC
50 Circle Road
Stony Brook, NY 11790-3409

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS: _____

_____ TELEPHONE: _____

Dear Sir:

Pursuant to the special conditions of the referenced permit, you are hereby notified that the authorized activity shall commence on _____ _____. We certify that we have read the referenced permit and approved plans and fully understand the authorized project and all permit conditions. We have inspected the project site and can complete the project as described in the permit and as depicted on the approved plans. We can do so in full compliance with all plan notes and permit conditions. The permit, permit sign, and approved plans will be available at the site for inspection in accordance with General Condition No. 1. (Both signatures required)

PERMITTEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE MUST BE SENT TO THE ABOVE ADDRESS ***AT LEAST TWO DAYS PRIOR TO COMMENCEMENT OF THE PROJECT*** *AND /OR ANY ASSOCIATED ACTIVITIES. FAILURE TO RETURN THIS NOTICE, POST THE PERMIT SIGN, OR HAVE THE PERMIT AND APPROVED PLANS AVAILABLE AT THE WORK SITE FOR THE DURATION OF THE PROJECT MAY SUBJECT THE PERMITTEE AND/OR CONTRACTOR TO APPLICABLE SANCTIONS AND PENALTIES FOR NON-COMPLIANCE WITH PERMIT CONDITIONS.*

Cut along this line X X X X X X X

NOTICE OF COMPLETION OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE **Or Fax to:** 631-444-0272
Bureau of Habitat- Freshwater Wetlands - NYSDEC
50 Circle Road
Stony Brook, NY 11790-3409

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS: _____

_____ TELEPHONE: _____

Pursuant to special conditions of the referenced permit, you are hereby notified that the authorized activity was completed on _____ _____. We have fully complied with the terms and conditions of the permit and approved plans. (Both signatures required)

PERMITTEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE, WITH PHOTOGRAPHS OF THE COMPLETED WORK AND/OR A COMPLETED SURVEY, AS APPROPRIATE, ***MUST BE SENT TO THE ABOVE ADDRESS WITHIN 30 DAYS OF COMPLETION OF THE PROJECT.***

95-20-1 (8/87)—9d

New York State
Department of Environmental Conservation

NOTICE

The Department of Environmental Conservation (DEC) has issued permit(s) pursuant to the Environmental Conservation Law for work being conducted at this site. For further information regarding the nature and extent of work approved and any Departmental conditions on it, contact the Regional Permit Administrator listed below. Please refer to the permit number shown when contacting the DEC.

Regional Permit Administrator

ROGER EVANS

Permit Number 1-4728-00556/00060

Expiration Date 4/12/2023

NOTE: This notice is **NOT** a permit

CONSTRUCTION PROTOCOLS & BEST MANAGEMENT PRACTICES

All phases of the restoration project will be completed by Suffolk County Department of Public Works (SCDPW). As there are no subcontractors, SCDPW will be able to actively and adaptively mitigate any issues that arise during restoration. The following construction protocols and best management practices will be utilized for the proposed restoration projects.

1.1 Environmental Supervisor

Environmental Supervisor will be assigned to the proposed projects to monitor the construction and will be responsible for supervision and implementation of daily work activities. The supervisor will be present prior to and during any work located within the marshes, and will coordinate with machine operators to determine the path of least impact, need for mats and when work should be suspended due to marsh conditions.

The Environmental Supervisor will be responsible for the identification of the best routes for machinery and personnel based on field conditions. The supervisor, with the help of onsite SCDPW staff, will assess field conditions and determine if conditions are suitable for restoration activities or if the stop work field conditions, as detailed below, are met. The Environmental Supervisor will determine the need for the placement of marsh mats and/or plywood in any waterlogged areas, and may require adjustments in silt fencing requirements to fit individual site conditions.

1.2 Field Conditions Evaluation

SCDPW shall take precautions to avoid tramping or compacting existing vegetated salt marsh and minimize the compaction of peat. In general, this will include the use of low ground pressure vehicles on the marsh (< 2.0 lbs/sq. ft.), and varying transit routes. Work will not occur if the marsh surface is saturated excessively or following storm & precipitation events that result in the flooding of the marsh surface as determined by Environmental Supervisor.

1.3 Construction Phasing

- The construction will begin at the location furthest from the construction access point and progress landward towards the project access. The outer marsh areas will be accessed from the upland in a way that minimizes marsh disturbance.

- For any ditch that will be filled, sediment barriers will be installed prior to any ditch filling.

- Construction routes across the marsh as well as at the access points will be offset each day to reduce the amount of disturbance to the area. Construction routes will be determined by the Environmental Supervisor and machinery operators at the start of each work day. In areas where there is a need to stop and retrace the same path a halftrack offset method will be used.

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO 1-4728-00556/00060
DATE 4/13/18 CKW

- Marsh mats or plywood will also be utilized as necessary on any frequently utilized machinery paths and / or turning points (see Section 1.6 below).

1.4 Construction Staging and Site Access Paths

- The primary objective when working in the marsh is not to alter the structural integrity of the peat column.

- The staging areas have been selected in upland stabilized areas as shown. Construction access paths from the staging areas to the marsh systems have been identified and may require stabilization with marsh mats or plywood depending on site specific conditions and vehicle movements. The Environmental Supervisor will identify areas of repetitive vehicle traffic and direct the usage of marsh mats/plywood throughout the duration of restoration activities.

- The use of roadways and staging areas during the construction phase shall not entail any alteration of existing grades or ground surfaces. (such as cutting, filling, rutting, or compaction)

- If equipment must be staged overnight within the marsh, the following protocols will be followed:
  - Equipment shall be stored on the marsh surface only if marsh mats or plywood are used.
  - Equipment storage on the marsh (if necessary) shall be moved daily to reduce prolonged impact on any one area.
  - Equipment shall be removed from the marsh in advance of extremely high tide or inclement weather.

1.5 Construction Vehicles

SCDPW will utilize equipment designed to limit disturbance to the marsh vegetation during the construction phase of the project. All machinery will be "low-impact machinery" that operates with ground pressure of 2.0 pounds per square inch (psi) or less. Machinery to be utilized includes Kobelco 70 SR excavator, Quality dump truck, Quality ditcher and a piston bully.

1.6 Marsh Mats

Marsh mats/plywood will be utilized at repetitive use locations (i.e., site access paths, bottle necks, frequently used turning points, under equipment that is idling, staging areas, uneven grade or waterlogged areas, etc.) at the discretion of the Environmental Supervisor.

1.7 Ongoing Assessment and Adaptive Management

SCDPW will actively monitor the project post-construction for functionality. Assessments will occur three or more times per growing season, continuing until the end of the 2022 monitoring season.

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO 2 of 3
DATE CKW

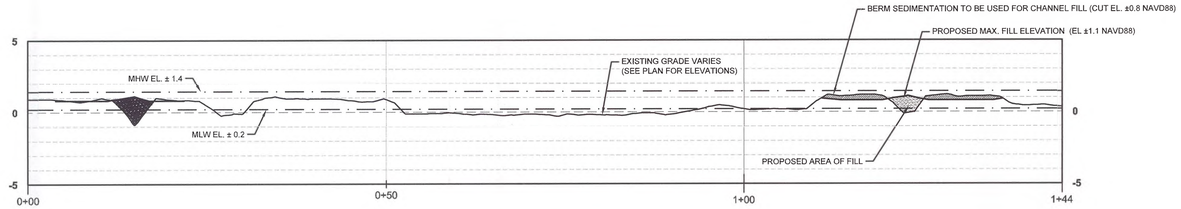
Some examples of assessments include the following potential conditions:

- Displacement of coir logs
- Subsidence within filled ditches resulting in low points/standing water
- Restriction of flow within remaining ditches
- Excessive standing water within pannes or creation of new pannes
- Inadequate vegetation regrowth within disturbed areas

Should any of the above conditions be observed, SCDPW will perform adaptive maintenance or repairs of the affected portion(s) to address the identified issue in consultations with NYSDEC. Work will be done by hand if practicable, however, SCDPW will use machinery required to complete restoration activities if necessary. All maintenance and repairs will follow the Construction Protocols and BMP outlined above should machinery be required to complete adaptive management goals. Some adaptive management methods are listed below:

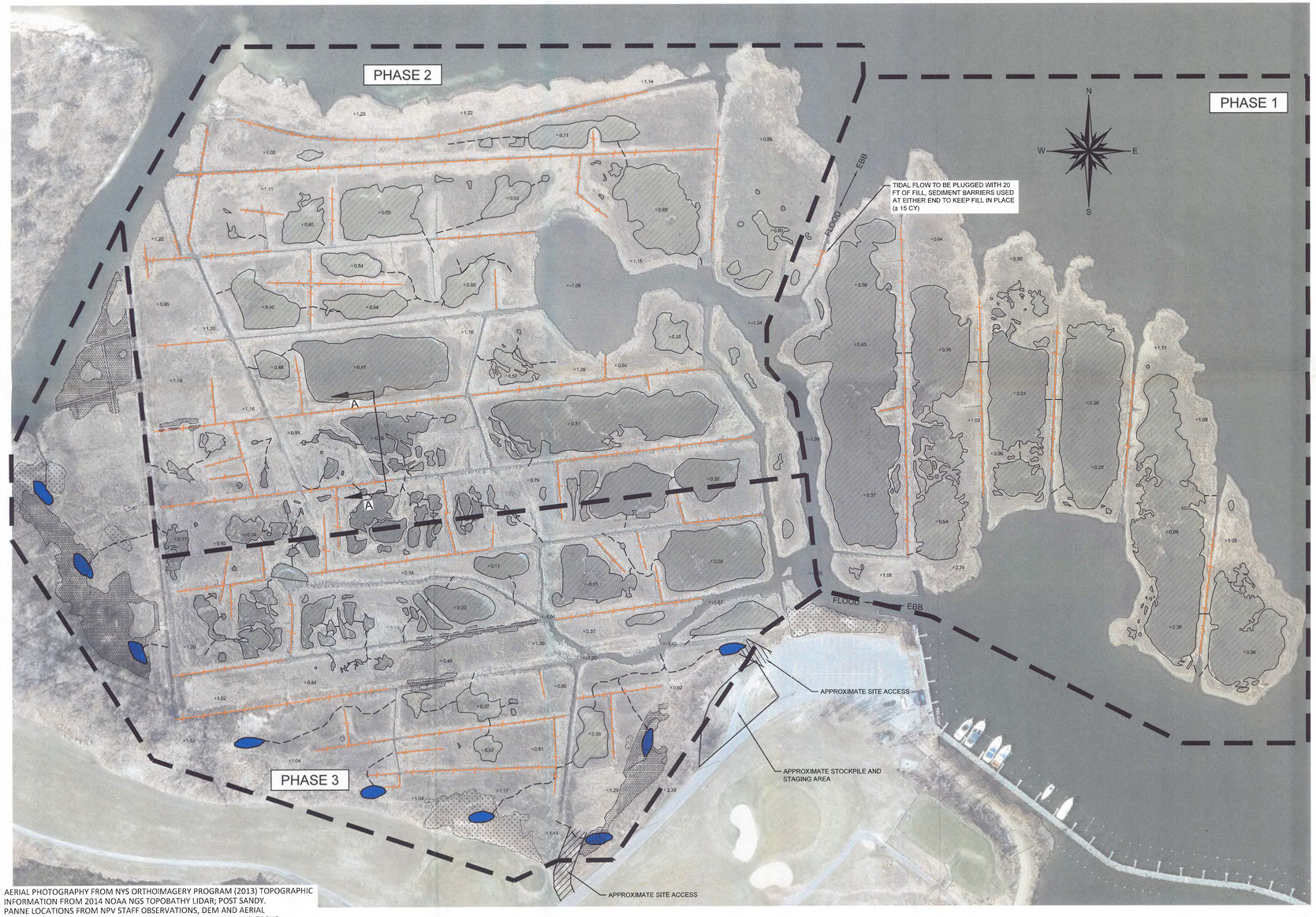
- Re-staking and restoration of sediment cover over coir logs
- Modification of elevations to create a level surface suitable for revegetation
- Removal of sediments within existing ditches to restore adequate flow and prevent sedimentation
- Maintenance/creation of runnels to allow for draining of standing water from pannes
- Revegetation of low marsh species within disturbed areas if revegetation does not occur within two growing seasons

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO 3 of 3
DATE 9/2/



SECTION 'A-A'

SCALE: 1" = 10' (HORIZ.)
1" = 5' (VERT.)



AERIAL PHOTOGRAPHY FROM NYS ORTHOIMAGERY PROGRAM (2013) TOPOGRAPHIC INFORMATION FROM 2014 NOAA NGS TOPOBATHY LIDAR; POST SANDY. PANNE LOCATIONS FROM NPV STAFF OBSERVATIONS, DEM AND AERIAL INFORMATION. WETLAND VEGETATION FROM 2008 TIDAL WETLAND TREND ANALYSIS DATA AND SUPPLEMENTAL WITH NPV FIELD OBSERVATIONS.

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 145, PROFESSIONAL ENGINEERING AND LAND SURVEYING, SECTION 7209 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND SPECIFIC DESCRIPTION OF THE ALTERATION.

GENERAL NOTES:

1) TO THE GREATEST EXTENT PRACTICAL, CONSTRUCTION VEHICLES AND CONSTRUCTION CREWS WILL AVOID TRAVERSING THE SAME PATH TO REDUCE THE COMPACTION WITHIN THE MARSH
2) THE TERMINI OF ALL EXISTING DITCHES TO BE FILLED WILL BE STAKED OUT PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
3) THE LOCATION OF RUNNELS INTENDED TO ALLOW FOR THE DRAINING OF PANNES WITHIN THE GRID CELLS IS SUBJECT TO THE DISCRETION OF THE PROJECT SUPERVISOR AS DETERMINED BY FIELD OBSERVATIONS PRIOR TO CONSTRUCTION.
4) IN ORDER TO LIMIT DISTURBANCE TO DESIRABLE MARSH VEGETATION, PROPOSED MICROPOOLS WILL BE LOCATED WITHIN EXISTING PANNES OR MONOCULTURES OF INVASIVE *PHRAGMITES AUSTRALIS* WHEREVER POSSIBLE.
5) TO ENSURE THE SAFETY OF THE PUBLIC AS WELL AS THE SAFETY OF THE CONSTRUCTION CREW, THE PROJECT SITE WILL BE "POSTED" DURING THE CONSTRUCTION PERIOD.
6) CONSTRUCTION ACCESS TO THE MARSH COMPLEX WILL OCCUR ONLY IN THE LOCATIONS IDENTIFIED ON THE "PROPOSED RESTORATION PLAN"
7) EXISTING MOSQUITO DITCHES THAT ARE NOT PROPOSED TO BE REALIGNED MAY BE CLEANED OF SEDIMENT AND DEBRIS. THIS MATERIAL WOULD BE USED AS FILL.

LEGEND

- EXISTING MOSQUITO DITCH TO BE FILLED (±9,031 FT / ±3,010 YD)
- PROPOSED RUNNEL (±3,335 LF / ±1,111 YD)
- PROPOSED MICRO POOL (9 POOLS)
- EXISTING PHRAGMITIES
- EXISTING IVA / LOW PHRAG.
- EXISTING MARSH PAN AREAS
- APPROXIMATE PHASE BOUNDARY
- ×1.00 EXISTING SPOT ELEVATION

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO 1-4728-00556/00060
DATE 4/13/18 (KW)
1 of 3

NO.	DATE:	REVISIONS:	BY:
2.	2-2-18	REVISED AS PER DEC AND FEMA COMMENTS	CCV
1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

P.E. SEAL AND SIGNATURE

PROPOSED MARSH RESTORATION
FOR
TIMBER POINT WETLAND

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	LU / TCD
DATE:	1-23-17
SCALE:	1" = 80'
FILE NO.:	-
CADD:	16154-TIMBER-DEM2-EA
DRAWING NO.:	C-101
SHEET NO.:	1 OF 3

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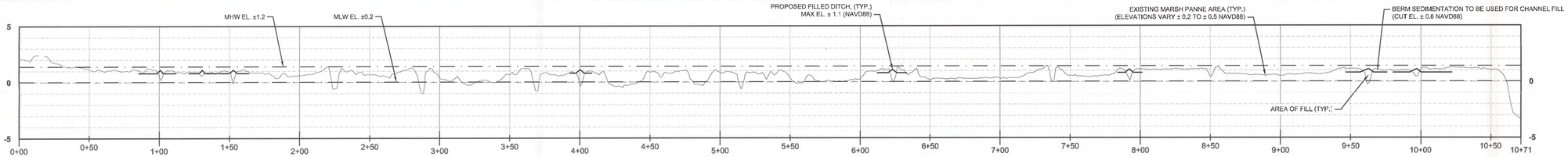
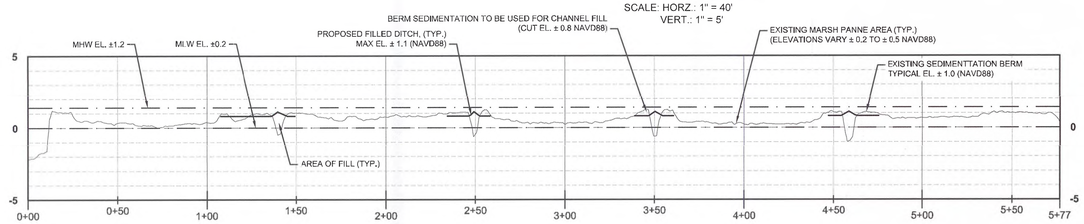


SECTION 'B-B'

SCALE: HORZ.: 1" = 40'
VERT.: 1" = 5'



SECTION 'C-C'

SCALE: HORZ.: 1" = 40'
VERT.: 1" = 5'

AERIAL PHOTOGRAPHY FROM NYS ORTHOIMAGERY PROGRAM (2013) TOPOGRAPHIC INFORMATION FROM 2014 NOAA NGS TOPOBATHY LIDAR; POST SANDY. PANNE LOCATIONS FROM NPV STAFF OBSERVATIONS, DEM AND AERIAL INFORMATION. WETLAND VEGETATION FROM 2008 TIDAL WETLAND TREND ANALYSIS DATA AND SUPPLEMENTAL WITH NPV FIELD OBSERVATIONS.

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 145, PROFESSIONAL ENGINEERING AND LAND SURVEYING, SECTION 7209 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND SPECIFIC DESCRIPTION OF THE ALTERATION.

EARTHWORK CALCULATIONS

BASED ON DIGITAL TERRAIN MODELING UTILIZING THE NOAA POST SANDY LIDAR (2014) (NAVD 88) THE TOTAL VOLUME OF MATERIAL REQUIRED TO FILL THE EXISTING DITCHES (AS SHOWN) IS CALCULATED

FILL REQUIRED
VOLUME OF EXISTING DITCHES TO BE FILLED (SEE DETAILS FOR ELEVATIONS): 1,646 CY OF FILL

REQUIRED FILL CAN BE GENERATED BY RELOCATION OF DITCH SIDE BERM SOIL (WHERE SUFFICIENT BUILDUP IS AVAILABLE), MICRO POOLS CONSTRUCTION OR IMPORT OF FILL.

REQUIRED FILL CAN BE REDUCED BY INSTALLING COIR LOGS IN DITCHES TO BE FILLED
A 12"Ø COIR LOG HAS A VOLUME OF 0.087 CY / YD
VOLUME REDUCTION: 3,010 YD x 0.087 CY / YD = 262 CY

REDUCED VOLUME OF FILL REQUIRED: 1,384 CY

BORROW AVAILABLE FROM AREAS OF CUT
TOTAL VOLUME OF MATERIAL AVAILABLE FROM ADJACENT BERMS: 1,634 CY
MATERIAL FROM MICRO POOLS: 2.55 CY / MICRO POOL x 9 POOLS = 23 CY
TOTAL AVAILABLE BORROW MATERIAL = 1,657 CY

CUT AND FILL CALCULATION
TOTAL REQUIRED FILL = 1,384 CY
TOTAL AVAILABLE BORROW = 1,657 CY

CALCULATIONS PERFORMED SHOW TOTAL AVAILABLE BORROW FILL EXCEEDS THE REQUIRED FILL BY 273 CY. THE MATERIAL EXCAVATED FROM ADJACENT BERMS WILL BE ADJUSTED AS NECESSARY SO AS NOT EXCEED THE REQUIRED FILL VOLUME OF 1,384 CY.

NOTES:
1. VOLUME CALCULATIONS DEMONSTRATE AN APPROXIMATE VOLUME AND AREA OF EXCAVATION OF BERM (OR LEVIES) ADJACENT TO PROPOSED DITCHES TO BE FILLED.
2. THE CALCULATIONS ARE BASED ON A LEVEL CUT ABOVE ALL BERMS (WITHIN THE AREA SHOWN) TO AN ELEVATION OF 0.8' (NAVD 88). DUE TO THE VARIABLE NATURE OF THE MARSH SYSTEM THESE AREAS OF CUT MAY VARY IN ELEVATION , HOWEVER THE TOTAL VOLUME OF REQUIRED FILL WILL REMAIN LESS THAN 1,500 CY MAX.

LEGEND

- EXISTING MOSQUITO DITCH TO BE FILLED (±9,031 FT / ±3,010 YD)
- PROPOSED RUNNEL (±3,335 LF / ±1,111 YD)
- PROPOSED MICRO POOL (9 POOLS)
- EXISTING PHRAGMITIES
- EXISTING IVA / LOW PHRAG.
- EXISTING MARSH PAN AREAS
- AREA OF PROPOSED BERM CUT FOR USE AS BORROW FILL (CUT EL. ± 0.8 NAVD88)
- ×1.00 EXISTING SPOT ELEVATION

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO 2 of 3
DATE CKW

NO.	DATE:	REVISIONS:	BY:
2.	2-2-18	REVISED AS PER DEC AND FEMA COMMENTS	CCV
1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

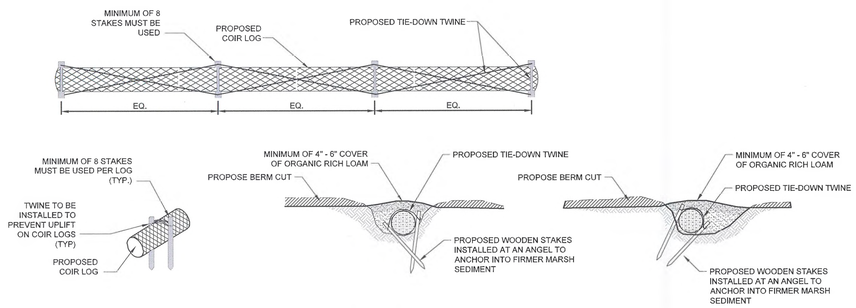
P.E. SEAL AND SIGNATURE

PROPOSED MARSH RESTORATION
EARTHWORK ANALYSIS
FOR
TIMBER POINT WETLAND

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	LU / TCD
DATE:	1-23-17
SCALE:	1" = 80'
FILE NO.:	-
CADD:	16154-TIMBER-DEM2-EA
DRAWING NO.:	C-102
SHEET NO.:	2 OF 3

3:\projects\16154\SITE\16154-TIMBER-DEM2-EA.dwg



TYPICAL COIR LOG DETAIL

N.T.S.

COIR LOG SPECIFICATIONS

COIR LOGS SHALL BE 12-INCH, 16-INCH AND 20-INCH DIAMETER CYLINDRICAL MODULES OF COCONUT

FIBER ENCASED IN A HAND-KNOTTED COIR NETTING. EACH COIR LOG SHALL BE 10 FT IN LENGTH. THE OUTER NETTING OF THE COIR LOG SHALL BE CONSTRUCTED FROM 3-PLY HIGH STRENGTH COIR TWINE OR YARN. THE NETTING SHALL HAVE 2" X 2" RHOMBIC OPENINGS WITH HAND-KNOTTED JUNCTIONS. THE INNER CORE SHALL BE 100% UNSORTED. WELL-CLEANED, COCONUT FIBER UNIFORMLY DISTRIBUTED ALONG THE LENGTH OF THE LOG. THE STUFFED DENSITY OF THE COIR FIBER SHALL BE A MINIMUM OF 8 LBS/CU.FT. COCONUT FIBER SHALL BE OBTAINED FROM FRESHWATER CURED COCONUT HUSKS.

EACH COIR LOG SHALL HAVE HIGH STRENGTH COIR ROPE LOOPS ATTACHED TO BOTH ENDS. THE COIR ROPE LOOPS SHALL BE INTEGRALLY CONNECTED TO THE ENDS OF THE COIR LOGS IN A MANNER THAT DISTRIBUTES THE LOAD UNIFORMLY ACROSS THE OUTER COIR NETTING. THE COIR ROPE SHALL BE MADE FROM THREE 2-PLY COIR YARNS BRAIDED TOGETHER.

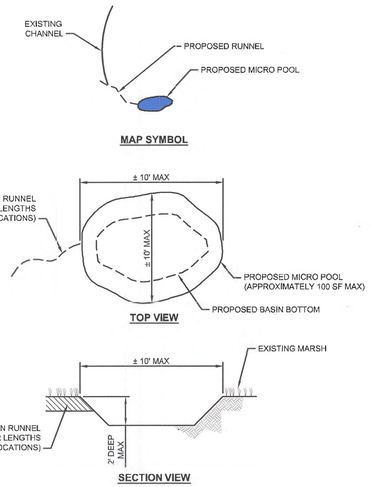
WOOD STAKES SHALL BE 2-INCH X 2-INCH, NOMINAL SIZE WITH PENCIL POINT ON ONE END AND SQUARE CUT AT THE OTHER END. TO ENSURE MINIMUM EMBEDMENT LENGTH INTO THE GROUND, THE STAKE LENGTH SHALL BE AS FOLLOWS DEPENDING ON THE SIZE OF THE COIR LOG:

COIR LOG SIZE	MINIMUM STAKE LENGTH
12" Ø	36"
16" Ø	40"
20" Ø	48"

COIR LOG INSTALLATION

COIR LOGS SHALL BE INSTALLED IN THE AREAS AS SHOWN ON THE PLANS. INSTALLATION SHALL FOLLOW THE STEPS OUTLINED BELOW AND AS DIRECTED BY THE ENVIRONMENTAL SUPERVISOR.

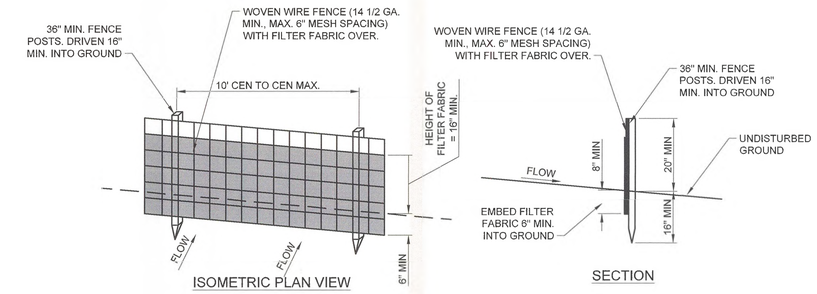
1. LOGS SHALL BE PLACED AS SHOWN ON THE PLANS. IMMEDIATELY STABILIZE ROLLS WITH WOOD STAKES AND COIR TWINE ACCORDING TO THE DETAILS SHOWN ON THE PLANS.
2. PLACE WOOD STAKES ON BOTH SIDES ANGLED INWARD AS IF TO FORM AN "X" BELOW THE COIR LOG, ONE FOOT FROM EACH AND ONE MID LENGTH OR AT AN ANGEL TO ANCHOR INTO FIRMER MARSH SEDIMENT AS SHOWN ABOVE. SECURE AND TIE COIR TWINE TIGHTLY ACROSS EACH ROLL. THE TWINE SHOULD BE WOUND AROUND EACH STAKE AND OVER EACH ROLL SO THAT EACH TIED SECTION HAS A MINIMUM OF 4 STRANDS OF TWINE SECURING THE ROLL DOWN. ONCE THE TWINE IS TIED TIGHTLY, DRIVE STAKES TO THE FINAL DEPTH SO THAT TOP OF THE STAKE IS BELOW TOP OF THE LOGS. FOUR SETS OF STAKES WILL BE INSTALLED PER 10FOOT COIR LOG
3. ENDS OF ADJACENT LOGS SHALL BE TIED TOGETHER WITH COIR TWINE. AT LEAST 3 PASSES WITH THE TWINE SHALL BE MADE IN THE END NETTING BETWEEN ADJACENT LOGS.
4. THE ENVIRONMENTAL SUPERVISOR MAY REQUIRE ADJUSTMENTS IN THE STAKING AND/OR TYING REQUIREMENTS TO FIT INDIVIDUAL SITE CONDITIONS.



PROPOSED MICRO POOL DETAIL

NTS

NOTE:
1. MICRO POOLS ARE CREATED TO PROVIDE FISH HABITAT FOR BIOLOGICAL MOSQUITO CONTROL.
2. LOCATIONS OF POOLS ARE TO BE WITHIN AREAS OF PHRAGMITES OR EXISTING WATER LOGGED AREAS THAT ARE DEVOID OF NATURAL VEGETATION.

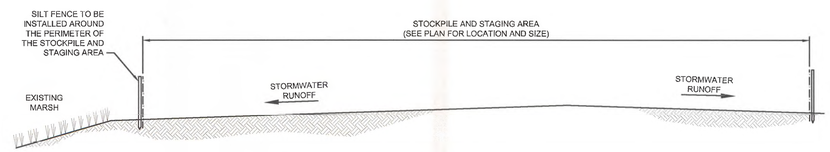


SILT FENCE DETAIL

NOT TO SCALE

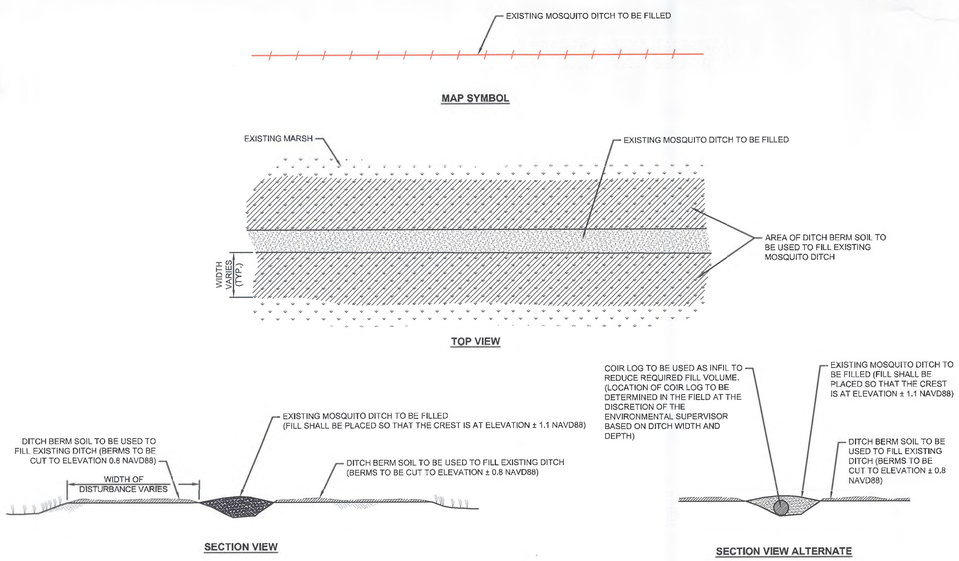
NOTES
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
5. POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD.
6. FENCE: WOVEN WIRE, 14 1/2 GA. 6" MAX.MESH OPENING.
7. FILTER CLOTH SHALL BE A WOVEN GEOTEXTILE COMPOSED OF POLYPROPYLENE CONFORMING TO AASHTO M288.

STANDARD SYMBOL
—— SF ——



PROPOSED STAGING AND STOCKPILE AREA DETAIL

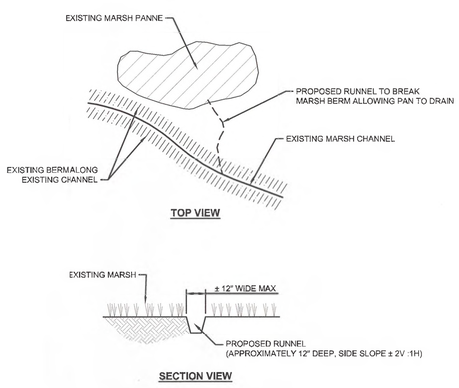
NTS



NOTE: SEE TYPICAL COIR LOG DETAIL

PROPOSED DITCH FILL DETAIL

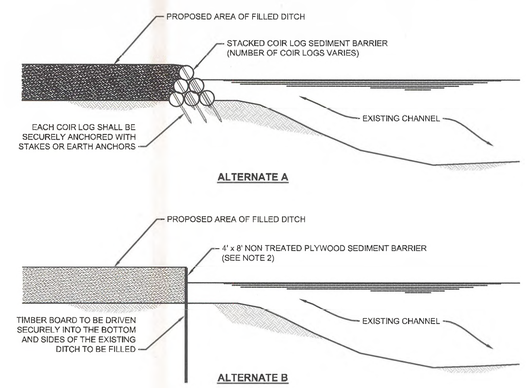
NTS



PROPOSED RUNNEL DETAIL

NTS

NOTES:
1. RUNNELS ARE PROPOSED TO BE CONSTRUCTED BOTH BY HAND AND BY MACHINE.
2. MATERIAL REMOVAL FROM RUNNEL CONSTRUCTION PERFORMED BY MACHINERY IS NEGLIGIBLE AND/OR BROADCAST IN THE AREA OF WORK. THEREFORE IT WILL NOT BE USED AS PROPOSED FILL.
3. MACHINE CONSTRUCTION RUNNEL IS A "V" SHAPED CROSS SECTION THAT MEETS THE DIMENSIONS SHOWN IN THE DETAIL.



SEDIMENT BARRIER DETAIL

NTS

NOTE: SEDIMENT BARRIER IS TO BE USED TO TERMINATE A DITCH FILLING OPERATION AND PREVENT THE LOSS OF FILL SEDIMENT.

NYSDEC
APPROVED AS PER TERMS AND CONDITIONS OF
PERMIT NO. 3 of 3
DATE EKW

NO.	DATE:	REVISIONS:	BY:
2.	2-2-18	REVISED AS PER DEC AND FEMA COMMENTS	CCV
1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

P.E. SEAL AND SIGNATURE

PROPOSED MARSH RESTORATION DETAILS
FOR
TIMBER POINT WETLAND

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	LU / TCD
DATE:	1-23-17
SCALE:	AS SHOWN
FILE NO.:	-
CADD:	16154-DET
DRAWING NO.:	C-501
SHEET NO.:	3 OF 3

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 145, PROFESSIONAL ENGINEERING AND LAND SURVEYING, SECTION 7209 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND SPECIFIC DESCRIPTION OF THE ALTERATION.

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NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

July 5, 2017

Mr. Roger Evans, Permit Administrator
New York State Department of Environmental Conservation
SUNY at Stony Brook
50 Circle Road
Stony Brook, NY 11790

Re: Article 25 Permit
West Sayville Wetland
SCTM# 0500-40500-200-7000
NP&V #16154

Dear Roger:

Nelson, Pope & Voorhis (NP&V)/Nelson & Pope (N&P) has been retained by Suffolk County Department of Public Works, Division of Vector Control (c/o Tom Iwanejko) to obtain the necessary permits for the improvements proposed at the above referenced site. The proposed project involves the restoration of marsh habitat and associated reduction of mosquito breeding areas through the use of integrated marsh management techniques.

West Sayville is the site of historic grid ditching which has contributed to the long-term degradation of the marsh system. When originally constructed, the linear ditches were arbitrarily placed and consideration was not given to the typical scour and sediment deposition processes that occurs along a naturally flowing channel. The linear ditches run perpendicular or parallel to each other and create small panels between the grid-like ditches. As a result, a significant loss in marsh habitat has occurred at this site. In addition to the marsh loss, berms have formed along the edges of the ditches contributing to the change in the tidal flow through the marsh system, and ultimately creating ideal mosquito breeding habitat. The proposed project seeks to return the marsh to a more natural system to ameliorate the impacts the marsh has experienced over time.

The project consists of five main components; removal of material from the existing berms and utilization of that material in the filling of historic grid ditching, the creation of runnels, naturalization of channels and the creation of micro-pools. The project proposes filling of approximately ±760 linear feet (FT) of existing mosquito ditches. To fill these ditches, material from the berms located along the banks of the ditches will be utilized. Capturing material from the berms will help create a more level marsh surface that more closely resembles natural conditions. Revegetation across the filled ditches and in the disturbed area associated with berm removal will occur naturally from existing seed stock present in the soil and through encroachment from the vegetation along the edges of the disturbance. Coir logs will be utilized to help fill the mosquito ditches, as sufficient volume to fill the ditches is not available within the berms. coir logs are biodegradable coconut fiber rolls that can be placed in the existing mosquito ditches, secured and covered with material captured from the berms. It is expected that the coir logs will slowly degrade and be replaced by sediment over time through natural sediment deposition processes that occur within the marsh system.

Narrow, shallow channels (called runnels) are proposed to connect existing pannes to the naturalized channels. This will allow the standing water to drain from pannes and prevent future standing water from occurring in the existing depressions. Once standing water is no longer present, it is anticipated that natural sediment deposition and associated revegetation of the pannes will occur in subsequent growing seasons.

A portion of the remaining ditches will be naturalized in order to achieve a function that more closely mimics natural marsh conditions. Naturalized channels will utilize the same general layout of the remaining mosquito ditches, however, they will be altered to create more meandering channels to aid in slowing the water velocity within the ditches during tide inflow and outflow. As illustrated on the Proposed Marsh Restoration Details, ditch berm soil will be moved from the berm to the inner bank of the existing ditch in select locations. This will create small curves throughout the existing ditch that mimics natural channel conditions. It is expected that scour will occur on the outside of the curve created within the ditch and sediment deposition will occur on the inside of the created curve. This will prevent sediment from gathering on top of the banks of the channel and creating new berms, which currently exacerbates marsh loss. Approximately ±1,760 LF of naturalized channel will be created through the re-alignment of ±1,190 FT of existing mosquito ditches.

Finally, 11 micropools will be created in the marsh. At a maximum, micropools will be 10' x 5 x 2'. Micropools are designed to create fish habitat within the marsh and will be located in areas where Suffolk County Department of Public Works, Division of Vector Control, has detected mosquito larvae. The proposed micropools will be connected to tidal flow through runnels. Fish are natural predators of mosquitos and the creation of fish habitat in these areas is expected to reduce the overall mosquito population. Furthermore, as these areas are dominated by the invasive reed *Phragmites australis,* the creation of micropools will have limited disturbance to desirable marsh vegetation.

Low ground pressure (<2 psi) machinery will be utilized during construction in order to minimize the impact to the existing healthy marsh areas. Construction access will be from the existing adjacent golf course, and all staging and equipment storage will occur in the upland area.

I have enclosed all of the required application materials for your review:

1. Joint Application Form and Full EAF.
2. Project Narrative
3. $900 Permit Application Fee
4. Letter of Authorization from Suffolk County DPW and NYSDEC
5. Two (2) copies of the Location map
6. Photographs of existing conditions with reference aerial photograph
7. Copy of the NYSDEC Tidal Wetlands Map
8. Four (4) copies of the Proposed Marsh Restoration Plan

Please let me know if you need any additional information, and do not hesitate to call should you have any questions. Thank you.

Sincerely,

NELSON, POPE & VOORHIS, LLC

Hannah Emouna
Environmental Scientist

cc: Tom Iwanejko
James J. Gilmore, NYSDEC
Dawn McReynolds, NYSDEC
File

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Permits, Region 1
SUNY @ Stony Brook, 50 Circle Road, Stony Brook, NY 11790
P: (631) 444-0365 I F: (631) 444-0360
www.dec.ny.gov

RECEIVED
APR 1 6 2018
NELSON & POPE

April 10, 2018

Suffolk County DPW- Vector Control
Attn: Tom Iwanejko
335 Yaphank Avenue
Yaphank, NY 11980

RE: Permit No.: 1-4728-05650/00001

Dear Permittee:

In conformance with the requirements of the State Uniform Procedures Act (Article 70, ECL) and its implementing regulations (6NYCRR, Part 621) we are enclosing your permit for the referenced activity. Please carefully read all permit conditions and special permit conditions contained in the permit to ensure compliance during the term of the permit. If you are unable to comply with any conditions, please contact us at the above address.

Also enclosed is a permit sign which is to be conspicuously posted at the project site and protected from the weather and a Notice of Commencement/Completion of Construction. Please note, the permit sign and Notice of Commencement/Completion of Construction form are sent to either the permittee or the facility application contact, not both.

Sincerely,

Laura J. Scovazzo
Deputy Permit Administrator

LJS/ls

PERMIT

Under the Environmental Conservation Law (ECL)

Permittee and Facility Information

Permit Issued To:
SUFFOLK COUNTY
H LEE DENNISON BLDG

HAUPPAUGE, NY 11788

Facility:
W SAYVILLE WETLAND
W SAYVILLE WETLAND|SCTM 500-405-200-7000
WEST SAYVILLE, NY 11796

Facility Application Contact:
NELSON POPE & VOORHIS LLC
572 WALT WHITMAN RD
MELVILLE, NY 11747
(631) 427-5665

Facility Location: in ISLIP in SUFFOLK COUNTY **Village:** West Sayville
Facility Principal Reference Point: NYTM-E: 660.46 NYTM-N: 4509.673
Latitude: 40°43'20.5" Longitude: 73°06'00.3"
Project Location: West Sayville Wetlands - Watercourse - Great South Bay
Authorized Activity: Marsh restoration which involves improving the existing degraded marsh ditch features by strategically filling them with local material and coir logs and creating naturalized tidal channels to improve tidal exchange between the bay and the marsh interior and the creation of micropools connected to tidal channels to enhance natural conditions and to control marsh mosquito species. All authorized activities must be in strict conformance per attached three page "Construction Protocols and Best Management Practices" and Sheets one through three of three prepared by Nelson & Pope last revised 2/2/18, all stamped NYSDEC approved 4/6/18.

Permit Authorizations

Tidal Wetlands - Under Article 25
Permit ID 1-4728-05650/00001
New Permit Effective Date: 4/10/2018 Expiration Date: 4/9/2023
Water Quality Certification - Under Section 401 - Clean Water Act
Permit ID 1-4728-05650/00002
New Permit Effective Date: 4/10/2018 Expiration Date: 4/9/2023
Excavation & Fill in Navigable Waters - Under Article 15, Title 5
Permit ID 1-4728-05650/00003
New Permit Effective Date: 4/10/2018 Expiration Date: 4/9/2023

NYSDEC Approval

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, and all conditions included as part of this permit.

Permit Administrator: LAURA J SCOVAZZO, Deputy Regional Permit Administrator
Address: NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY 11790 -3409

Authorized Signature: Laura J. Scovazzo Date 4/11/18

Distribution List

NELSON POPE & VOORHIS LLC
Marine Habitat Protection
LAURA J SCOVAZZO

Permit Components

NATURAL RESOURCE PERMIT CONDITIONS

WATER QUALITY CERTIFICATION SPECIFIC CONDITION

GENERAL CONDITIONS, APPLY TO ALL AUTHORIZED PERMITS

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

NATURAL RESOURCE PERMIT CONDITIONS - Apply to the Following Permits: TIDAL WETLANDS; WATER QUALITY CERTIFICATION; EXCAVATION & FILL IN NAVIGABLE WATERS

1. **Post Permit Sign** The permit sign enclosed with this permit shall be posted in a conspicuous location on the worksite and adequately protected from the weather.

2. **Notice of Commencement** At least 48 hours prior to commencement of the project, the permittee and contractor shall sign and return the top portion of the enclosed notification form certifying that they are fully aware of and understand all terms and conditions of this permit. Within 30 days of completion of project, the bottom portion of the form must also be signed and returned, along with photographs of the completed work.

3. **No Construction Debris in Wetland or Adjacent Area** Any debris or excess material from construction of this project shall be completely removed from the adjacent area (upland) and removed to an approved upland area for disposal. No debris is permitted in wetlands and/or protected buffer areas.

4. **Storage of Equipment, Materials** The storage of construction equipment and materials shall be confined as per approved protocol.

5. **Disposal Locations** All excavated material shall be appropriately disposed of as per the project plan with minimal disturbance and/or impact to vegetated marsh areas. Disposal of excess material beyond the approved project site will require further written approval from the Department (permit, modification, amendment).

6. **Low Ground Pressure Equipment** All ground and heavy equipment used for this project shall be low ground pressure equipment with a ground pressure of 2 psi or less on the marsh surface. Storage of equipment and materials when not in operation, shall be limited to upland areas of the project, or on **the marsh surface only if marsh mats or plywood are used.**

7. **Fueling Areas** Fueling of equipment is strictly prohibited within tidal wetlands and within 100 feet of the tidal wetland boundary. Fueling areas must be approved by the department and contained by haybales or other approved containment devices. Spills must be prevented from entering tidal wetlands and/or waterways. Should a spill occur, the permittee shall notify the office of Regional Habitat - TW immediately and shall provide a plan for containment, clean-up and restoration of the impacted area for the approval of the department.

8. **Work During Winter** Use of heavy equipment and marsh/ditch excavation are limited to the winter months (December 1 to April 30, inclusive) to minimize impacts to existing marsh vegetation.

9. **Activities Consistent with Approved Plans** All activities and marsh alterations must be consistent with the approved plan. Activities or alterations beyond the scope of the approved project and/or not explicitly authorized by the permit will require further written approval of the Regional Habitat - TW office prior to commencement.

10. **Annual Monitoring Report** The permittee must submit a written report of annual monitoring efforts, data and analysis by January 30 of each year for the approval of the Regional Habitat - TW office. Data collection efforts will be consistent with the approved monitoring plan. Any changes to approved monitoring protocols will require the written approval of the Regional Habitat Manager.

11. **Work** All work shall be done under the direct supervision of an Environmental Supervisor, as described in the approved Construction Protocols and Best Management Practices.

12. **No Interference With Navigation** There shall be no unreasonable interference with navigation by the work herein authorized.

13. **State May Order Removal or Alteration of Work** If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

14. **State May Require Site Restoration** If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may lawfully require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

15. **Precautions Against Contamination of Waters** All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

16. **Conformance With Plans** All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or applicant's agent as part of the permit application. Such approved plans were prepared by per attached three page "Construction Protocols and Best Management Practices" and sheets one through 3 of 3 prepared by Nelson & Pope last revised 2/2/18, all stamped NYSDEC approved 4/6/18.

17. **State Not Liable for Damage** The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

WATER QUALITY CERTIFICATION SPECIFIC CONDITIONS

1. **Water Quality Certification** The authorized project, as conditioned pursuant to the Certificate, complies with Section 301, 302, 303, 306, and 307 of the Federal Water Pollution Control Act, as amended and as implemented by the limitations, standards, and criteria of state statutory and regulatory requirements set forth in 6 NYCRR Section 608.9(a). The authorized project, as conditioned, will also comply with applicable New York State water quality standards, including but not limited to effluent limitations, best usages and thermal discharge criteria, as applicable, as set forth in 6 NYCRR Parts 701, 702, 703, and 704.

GENERAL CONDITIONS - Apply to ALL Authorized Permits:

1. **Facility Inspection by The Department** The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71- 0301 and SAPA 401(3).

The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when requested by the Department.

A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site or facility. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

2. **Relationship of this Permit to Other Department Orders and Determinations** Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

3. **Applications For Permit Renewals, Modifications or Transfers** The permittee must submit a separate written application to the Department for permit renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing. Submission of applications for permit renewal, modification or transfer are to be submitted to:

Regional Permit Administrator
NYSDEC Region 1 Headquarters
SUNY @ Stony Brook|50 Circle Rd
Stony Brook, NY11790 -3409

4. **Submission of Renewal Application** The permittee must submit a renewal application at least 30 days before permit expiration for the following permit authorizations: Excavation & Fill in Navigable Waters, Tidal Wetlands, Water Quality Certification.

5. **Permit Modifications, Suspensions and Revocations by the Department** The Department reserves the right to exercise all available authority to modify, suspend or revoke this permit. The grounds for modification, suspension or revocation include:

a. materially false or inaccurate statements in the permit application or supporting papers;

b. failure by the permittee to comply with any terms or conditions of the permit;

c. exceeding the scope of the project as described in the permit application;

d. newly discovered material information or a material change in environmental conditions, relevant technology or applicable law or regulations since the issuance of the existing permit;

e. noncompliance with previously issued permit conditions, orders of the commissioner, any provisions of the Environmental Conservation Law or regulations of the Department related to the permitted activity.

6. **Permit Transfer** Permits are transferrable unless specifically prohibited by statute, regulation or another permit condition. Applications for permit transfer should be submitted prior to actual transfer of ownership.

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification
The permittee, excepting state or federal agencies, expressly agrees to indemnify and hold harmless the Department of Environmental Conservation of the State of New York, its representatives, employees, and agents ("DEC") for all claims, suits, actions, and damages, to the extent attributable to the permittee's acts or omissions in connection with the permittee's undertaking of activities in connection with, or operation and maintenance of, the facility or facilities authorized by the permit whether in compliance or not in compliance with the terms and conditions of the permit. This indemnification does not extend to any claims, suits, actions, or damages to the extent attributable to DEC's own negligent or intentional acts or omissions, or to any claims, suits, or actions naming the DEC and arising under Article 78 of the New York Civil Practice Laws and Rules or any citizen suit or civil rights provision under federal or state laws.

Item B: Permittee's Contractors to Comply with Permit
The permittee is responsible for informing its independent contractors, employees, agents and assigns of their responsibility to comply with this permit, including all special conditions while acting as the permittee's agent with respect to the permitted activities, and such persons shall be subject to the same sanctions for violations of the Environmental Conservation Law as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits
The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required to carry out the activities that are authorized by this permit.

Item D: No Right to Trespass or Interfere with Riparian Rights
This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

NOTICE OF COMMENCEMENT OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE Or Fax to: 631-444-0297
Bureau of Marine Habitat Protection - NYSDEC
50 Circle Road
Stony Brook, NY 11790-3409

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS: _____

_____ TELEPHONE: _____

Dear Sir: _____

Pursuant to the special conditions of the referenced permit, you are hereby notified that the authorized activity shall commence on _____ . We certify that we have read the referenced permit and approved plans and fully understand the authorized project and all permit conditions. We have inspected the project site and can complete the project as described in the permit and as depicted on the approved plans. We can do so in full compliance with all plan notes and permit conditions. The permit, permit sign, and approved plans will be available at the site for inspection in accordance with General Condition No. 1. (Both signatures required)

PERMITEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE MUST BE SENT TO THE ABOVE ADDRESS AT LEAST TWO DAYS PRIOR TO COMMENCEMENT OF THE PROJECT AND /OR ANY ASSOCIATED ACTIVITIES. FAILURE TO RETURN THIS NOTICE, POST THE PERMIT SIGN, OR HAVE THE PERMIT AND APPROVED PLANS AVAILABLE AT THE WORK SITE FOR THE DURATION OF THE PROJECT MAY SUBJECT THE PERMITTEE AND/OR CONTRACTOR TO APPLICABLE SANCTIONS AND PENALTIES FOR NON-COMPLIANCE WITH PERMIT CONDITIONS.

Cut along this line X X X X X X X

NOTICE OF COMPLETION OF CONSTRUCTION

RETURN THIS FORM TO: COMPLIANCE Or Fax to: 631-444-0297
Bureau of Marine Habitat Protection - NYSDEC
50 Circle Rd.
Stony Brook, NY 11790-3409

PERMIT NUMBER: _____ EXPIRATION DATE: _____

PERMITTEE NAME & PROJECT ADDRESS: _____

_____

CONTRACTOR NAME & ADDRESS:

_____

_____ TELEPHONE: _____

Pursuant to special conditions of the referenced permit, you are hereby notified that the authorized activity was completed on _____ We have fully complied with the terms and conditions of the permit and approved plans. (Both signatures required)

PERMITEE: _____ DATE _____

CONTRACTOR: _____ DATE _____

THIS NOTICE, WITH PHOTOGRAPHS OF THE COMPLETED WORK AND/OR A COMPLETED SURVEY, AS APPROPRIATE, MUST BE SENT TO THE ABOVE ADDRESS WITHIN 30 DAYS OF COMPLETION OF THE PROJECT.

95-20-1 (8/87)—9d

New York State
Department of Environmental Conservation

NOTICE

The Department of Environmental Conservation (DEC) has issued permit(s) pursuant to the Environmental Conservation Law for work being conducted at this site. For further information regarding the nature and extent of work approved and any Departmental conditions on it, contact the Regional Permit Administrator listed below. Please refer to the permit number shown when contacting the DEC.

Regional Permit Administrator

ROGER EVANS

Permit Number 1-4728-05650/00001

Expiration Date 4/9/2028

NOTE: This notice is **NOT** a permit

CONSTRUCTION PROTOCOLS & BEST MANAGEMENT PRACTICES

All phases of the restoration project will be completed by Suffolk County Department of Public Works (SCDPW). As there are no subcontractors, SCDPW will be able to actively and adaptively mitigate any issues that arise during restoration. The following construction protocols and best management practices will be utilized for the proposed restoration projects.

1.1 Environmental Supervisor

Environmental Supervisor will be assigned to the proposed projects to monitor the construction and will be responsible for supervision and implementation of daily work activities. The supervisor will be present prior to and during any work located within the marshes, and will coordinate with machine operators to determine the path of least impact, need for mats and when work should be suspended due to marsh conditions.

The Environmental Supervisor will be responsible for the identification of the best routes for machinery and personnel based on field conditions. The supervisor, with the help of onsite SCDPW staff, will assess field conditions and determine if conditions are suitable for restoration activities or if the stop work field conditions, as detailed below, are met. The Environmental Supervisor will determine the need for the placement of marsh mats and/or plywood in any waterlogged areas, and may require adjustments in silt fencing requirements to fit individual site conditions.

1.2 Field Conditions Evaluation

SCDPW shall take precautions to avoid tramping or compacting existing vegetated salt marsh and minimize the compaction of peat. In general, this will include the use of low ground pressure vehicles on the marsh (< 2.0 lbs/sq. ft.), and varying transit routes. Work will not occur if the marsh surface is saturated excessively or following storm & precipitation events that result in the flooding of the marsh surface as determined by Environmental Supervisor.

1.3 Construction Phasing

- The construction will begin at the location furthest from the construction access point and progress landward towards the project access. The outer marsh areas will be accessed from the upland in a way that minimizes marsh disturbance.

- For any ditch that will be filled, sediment barriers will be installed prior to any ditch filling.

- Construction routes across the marsh as well as at the access points will be offset each day to reduce the amount of disturbance to the area. Construction routes will be determined by the Environmental Supervisor and machinery operators at the start of each work day. In areas where there is a need to stop and retrace the same path a halftrack offset method will be used.

NYSDEC
APPROVED AS PER TERMS
AND CONDITIONS OF
PERMIT NO. 1-4728-05650/00001
DATE 4/6/18

- Marsh mats or plywood will also be utilized as necessary on any frequently utilized machinery paths and / or turning points (see Section 1.6 below).

1.4 Construction Staging and Site Access Paths

- The primary objective when working in the marsh is not to alter the structural integrity of the peat column.

- The staging areas have been selected in upland stabilized areas as shown. Construction access paths from the staging areas to the marsh systems have been identified and may require stabilization with marsh mats or plywood depending on site specific conditions and vehicle movements. The Environmental Supervisor will identify areas of repetitive vehicle traffic and direct the usage of marsh mats/plywood throughout the duration of restoration activities.

- The use of roadways and staging areas during the construction phase shall not entail any alteration of existing grades or ground surfaces. (such as cutting, filling, rutting, or compaction)

- If equipment must be staged overnight within the marsh, the following protocols will be followed:
  - Equipment shall be stored on the marsh surface only if marsh mats or plywood are used.
  - Equipment storage on the marsh (if necessary) shall be moved daily to reduce prolonged impact on any one area.
  - Equipment shall be removed from the marsh in advance of extremely high tide or inclement weather.

1.5 Construction Vehicles

SCDPW will utilize equipment designed to limit disturbance to the marsh vegetation during the construction phase of the project. All machinery will be "low-impact machinery" that operates with ground pressure of 2.0 pounds per square inch (psi) or less. Machinery to be utilized includes Kobelco 70 SR excavator, Quality dump truck, Quality ditcher and a piston bully.

1.6 Marsh Mats

Marsh mats/plywood will be utilized at repetitive use locations (i.e., site access paths, bottle necks, frequently used turning points, under equipment that is idling, staging areas, uneven grade or waterlogged areas, etc.) at the discretion of the Environmental Supervisor.

1.7 Ongoing Assessment and Adaptive Management

SCDPW will actively monitor the project post-construction for functionality. Assessments will occur three or more times per growing season, continuing until the end of the 2022 monitoring season.

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DATE 4/6/18

Some examples of assessments include the following potential conditions:

- Displacement of coir logs
- Subsidence within filled ditches resulting in low points/standing water
- Restriction of flow within remaining ditches
- Excessive standing water within pannes or creation of new pannes
- Inadequate vegetation regrowth within disturbed areas

Should any of the above conditions be observed, SCDPW will perform adaptive maintenance or repairs of the affected portion(s) to address the identified issue in consultations with NYSDEC. Work will be done by hand if practicable, however, SCDPW will use machinery required to complete restoration activities if necessary. All maintenance and repairs will follow the Construction Protocols and BMP outlined above should machinery be required to complete adaptive management goals. Some adaptive management methods are listed below:

- Re-staking and restoration of sediment cover over coir logs
- Modification of elevations to create a level surface suitable for revegetation
- Removal of sediments within existing ditches to restore adequate flow and prevent sedimentation
- Maintenance/creation of runnels to allow for draining of standing water from pannes
- Revegetation of low marsh species within disturbed areas if revegetation does not occur within two growing seasons

NYSDEC
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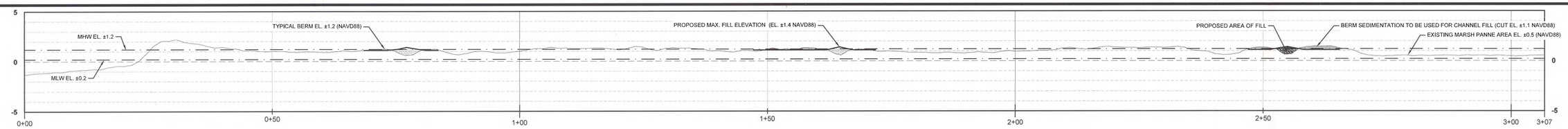
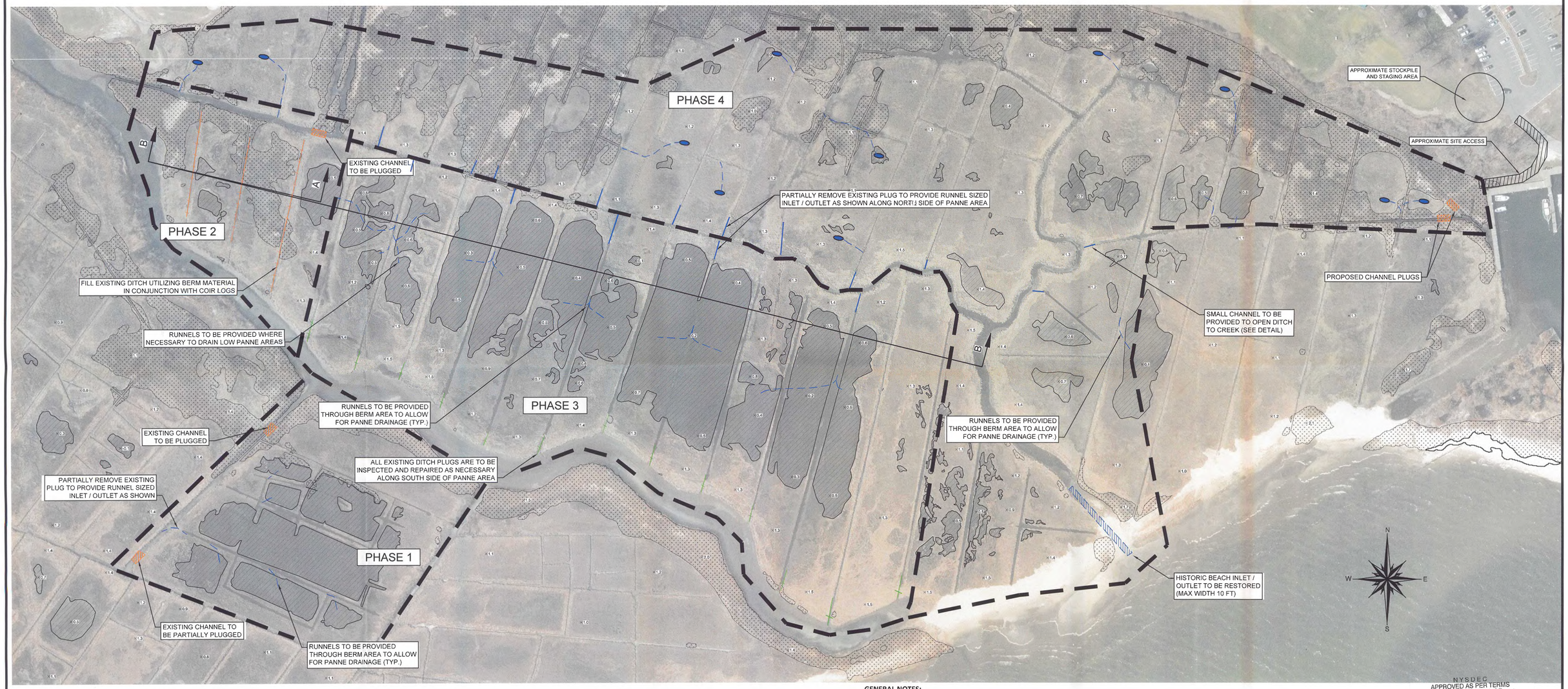
PERMIT NO. 1-4728-05650/00001
DATE 4/6/18



SECTION 'A-A'

SCALE: HORZ.: 1" = 10'
VERT.: 1" = 5'



LEGEND

- EXISTING DITCH PLUG TO BE INSPECTED AND REPAIRED (±460 FT)
- EXISTING MOSQUITO DITCH TO BE FILLED (±760 FT / ±253 CY)
- PROPOSED RUNNEL (±2,090 LF / ±697 YD)
- PROPOSED MICRO POOL (11)
- EXISTING PHRAGMITIES
- EXISTING IVA / LOW PHRAG.
- EXISTING MARSH PAN AREAS
- ×1.00 EXISTING SPOT ELEVATION

GENERAL NOTES:

1) TO THE GREATEST EXTENT PRACTICAL, CONSTRUCTION VEHICLES AND CONSTRUCTION CREWS WILL AVOID TRAVERSING THE SAME PATH TO REDUCE THE COMPACTION WITHIN THE MARSH
2) THE TERMINI OF ALL EXISTING DITCHES TO BE FILLED WILL BE STAKED OUT PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES.
3) THE LOCATION OF RUNNELS INTENDED TO ALLOW FOR THE DRAINING OF PANNES WITHIN THE GRID CELLS IS SUBJECT TO THE DISCRETION OF THE PROJECT SUPERVISOR AS DETERMINED BY FIELD OBSERVATIONS PRIOR TO CONSTRUCTION.
4) IN ORDER TO LIMIT DISTURBANCE TO DESIRABLE MARSH VEGETATION, PROPOSED MICROPOOLS WILL BE LOCATED WITHIN EXISTING PANNES OR MONOCULTURES OF INVASIVE *PHRAGMITES AUSTRALIS* WHEREVER POSSIBLE.
5) TO ENSURE THE SAFETY OF THE PUBLIC AS WELL AS THE SAFETY OF THE CONSTRUCTION CREW, THE PROJECT SITE WILL BE "POSTED" DURING THE CONSTRUCTION PERIOD.
6) CONSTRUCTION ACCESS TO THE MARSH COMPLEX WILL OCCUR ONLY IN THE LOCATIONS IDENTIFIED ON THE "PROPOSED RESTORATION PLAN"
7) EXISTING MOSQUITO DITCHES THAT ARE NOT PROPOSED TO BE REALIGNED MAY BE CLEANED OF SEDIMENT AND DEBRIS. THIS MATERIAL WOULD BE USED AS FILL.

N.Y.S.D.E.C.
APPROVED AS PER TERMS AND CONDITIONS OF
PERMIT NO. 1-4728-00560/00001
DATE 4/6/18

NO.	DATE:	REVISIONS:	BY:
2.	2-2-18	REVISED AS PER DEC AND FEMA COMMENTS	CCV
1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

P.E. SEAL AND SIGNATURE

PROPOSED MARSH RESTORATION

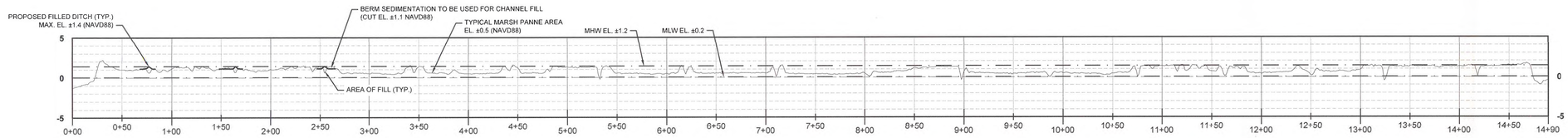
FOR

WEST SAYVILLE WETLAND

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

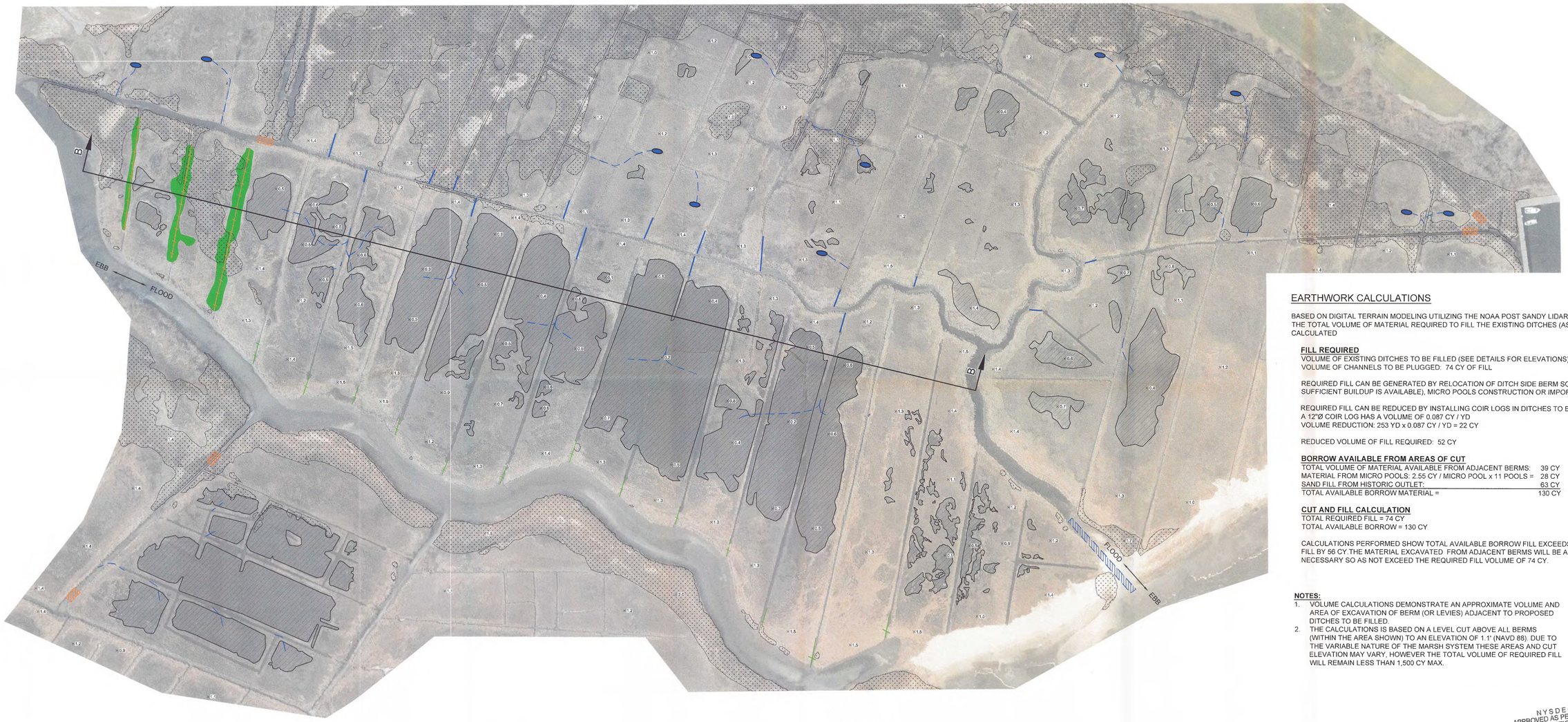
PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	HE
DATE:	3-29-17
SCALE:	1" = 80'
FILE NO.:	-
CADD:	16154 W SAYVILLE
DRAWING NO.:	C-101
SHEET NO.:	1 OF 3

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 145, PROFESSIONAL ENGINEERING AND LAND SURVEYING, SECTION 7209 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND SPECIFIC DESCRIPTION OF THE ALTERATION.



SECTION 'B-B'

SCALE: HORZ.: 1" = 60'
VERT.: 1" = 7.5'



EARTHWORK CALCULATIONS

BASED ON DIGITAL TERRAIN MODELING UTILIZING THE NOAA POST SANDY LIDAR (2014) (NAVD 88) THE TOTAL VOLUME OF MATERIAL REQUIRED TO FILL THE EXISTING DITCHES (AS SHOWN) IS CALCULATED

FILL REQUIRED
VOLUME OF EXISTING DITCHES TO BE FILLED (SEE DETAILS FOR ELEVATIONS): 39 CY OF FILL
VOLUME OF CHANNELS TO BE PLUGGED: 74 CY OF FILL

REQUIRED FILL CAN BE GENERATED BY RELOCATION OF DITCH SIDE BERM SOIL (WHERE SUFFICIENT BUILDUP IS AVAILABLE), MICRO POOLS CONSTRUCTION OR IMPORT OF FILL.

REQUIRED FILL CAN BE REDUCED BY INSTALLING COIR LOGS IN DITCHES TO BE FILLED
A 12"Ø COIR LOG HAS A VOLUME OF 0.087 CY / YD
VOLUME REDUCTION: 253 YD x 0.087 CY / YD = 22 CY

REDUCED VOLUME OF FILL REQUIRED: 52 CY

BORROW AVAILABLE FROM AREAS OF CUT

TOTAL VOLUME OF MATERIAL AVAILABLE FROM ADJACENT BERMS:	39 CY
MATERIAL FROM MICRO POOLS: 2.55 CY / MICRO POOL x 11 POOLS =	28 CY
SAND FILL FROM HISTORIC OUTLET:	63 CY
TOTAL AVAILABLE BORROW MATERIAL =	130 CY

CUT AND FILL CALCULATION
TOTAL REQUIRED FILL = 74 CY
TOTAL AVAILABLE BORROW = 130 CY

CALCULATIONS PERFORMED SHOW TOTAL AVAILABLE BORROW FILL EXCEEDS THE REQUIRED FILL BY 56 CY.THE MATERIAL EXCAVATED FROM ADJACENT BERMS WILL BE ADJUSTED AS NECESSARY SO AS NOT EXCEED THE REQUIRED FILL VOLUME OF 74 CY.

NOTES:
1. VOLUME CALCULATIONS DEMONSTRATE AN APPROXIMATE VOLUME AND AREA OF EXCAVATION OF BERM (OR LEVIES) ADJACENT TO PROPOSED DITCHES TO BE FILLED.
2. THE CALCULATIONS IS BASED ON A LEVEL CUT ABOVE ALL BERMS (WITHIN THE AREA SHOWN) TO AN ELEVATION OF 1.1' (NAVD 88). DUE TO THE VARIABLE NATURE OF THE MARSH SYSTEM THESE AREAS AND CUT ELEVATION MAY VARY, HOWEVER THE TOTAL VOLUME OF REQUIRED FILL WILL REMAIN LESS THAN 1,500 CY MAX.

N.Y.S.D.E.C.
APPROVED AS PER TERMS AND CONDITIONS OF
PERMIT NO. 1-4728-03650/00001
DATE 4/6/18

LEGEND

- EXISTING DITCH PLUG TO BE INSPECTED AND REPAIRED (±460 FT)
- EXISTING MOSQUITO DITCH TO BE FILLED (±760 FT / ±253 CY)
- PROPOSED RUNNEL (±2,090 LF / ±697 YD)
- PROPOSED MICRO POOL (11)
- EXISTING PHRAGMITIES
- EXISTING IVA / LOW PHRAG.
- EXISTING MARSH PAN AREAS
- AREA OF PROPOSED BERM CUT FOR USE AS BORROW FILL
- EXISTING SPOT ELEVATION

NO.	DATE:	REVISIONS:	BY:
2.	2-2-18	REVISED AS PER DEC AND FEMA COMMENTS	CCV
1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

PROPOSED MARSH RESTORATION EARTHWORK ANALYSIS
FOR
WEST SAYVILLE WETLAND

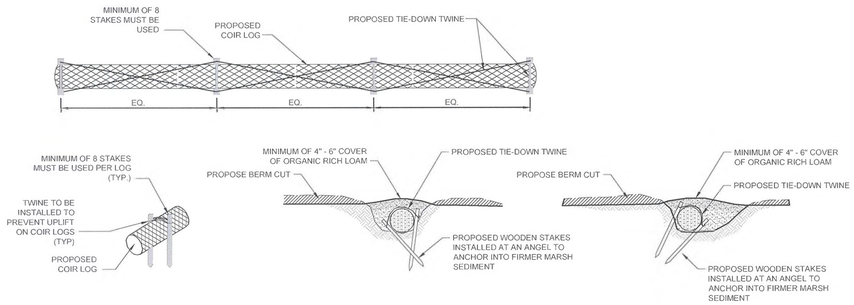
P.E. SEAL AND SIGNATURE

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	HE
DATE:	3-29-17
SCALE:	1" = 80'
FILE NO.:	-
CADD:	16154 W SAYVILLE
DRAWING NO.:	C-102
SHEET NO.:	2 OF 3

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 145, PROFESSIONAL ENGINEERING AND LAND SURVEYING, SECTION 7209 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND SPECIFIC DESCRIPTION OF THE ALTERATION.

S:\projects\16154\SITE\16154 W SAYVILLE.dwg



TYPICAL COIR LOG DETAIL

N.T.S.

COIR LOG SPECIFICATIONS

COIR LOGS SHALL BE 12-INCH, 16-INCH AND 20-INCH DIAMETER CYLINDRICAL MODULES OF COCONUT

FIBER ENCASED IN A HAND-KNOTTED COIR NETTING. EACH COIR LOG SHALL BE 10 FT IN LENGTH. THE OUTER NETTING OF THE COIR LOG SHALL BE CONSTRUCTED FROM 3-PLY HIGH **STRENGTH COIR TWINE OR YARN. THE NETTING SHALL HAVE 2" X 2" RHOMBIC OPENINGS WITH HAND-KNOTTED JUNCTIONS. THE INNER CORE SHALL BE 100% UNSORTED,** WELL-CLEANED, COCONUT FIBER UNIFORMLY DISTRIBUTED ALONG THE LENGTH OF THE LOG. THE STUFFED DENSITY OF THE COIR FIBER SHALL BE A MINIMUM OF 8 LBS/CU.FT. COCONUT FIBER SHALL BE OBTAINED FROM FRESHWATER CURED COCONUT HUSKS.

EACH COIR LOG SHALL HAVE HIGH STRENGTH COIR ROPE LOOPS ATTACHED TO BOTH ENDS. THE COIR ROPE LOOPS SHALL BE INTEGRALLY CONNECTED TO THE ENDS OF THE COIR LOGS IN A MANNER THAT DISTRIBUTES THE LOAD UNIFORMLY ACROSS THE OUTER COIR NETTING. THE COIR ROPE SHALL BE MADE FROM THREE 2-PLY COIR YARNS BRAIDED TOGETHER.

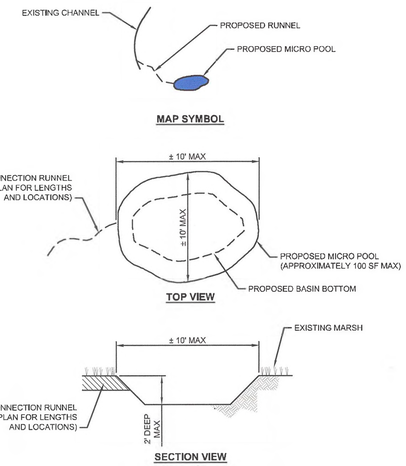
WOOD STAKES SHALL BE 2-INCH X 2-INCH, NOMINAL SIZE WITH PENCIL POINT ON ONE END AND SQUARE CUT AT THE OTHER END. TO ENSURE MINIMUM EMBEDMENT LENGTH INTO THE GROUND, THE STAKE LENGTH SHALL BE AS FOLLOWS DEPENDING ON THE SIZE OF THE COIR LOG:

COIR LOG SIZE	MINIMUM STAKE LENGTH
12" Ø	36"
16" Ø	40"
20" Ø	48"

COIR LOG INSTALLATION

COIR LOGS SHALL BE INSTALLED IN THE AREAS AS SHOWN ON THE PLANS. INSTALLATION SHALL FOLLOW THE STEPS OUTLINED BELOW AND AS DIRECTED BY THE ENVIRONMENTAL SUPERVISOR.

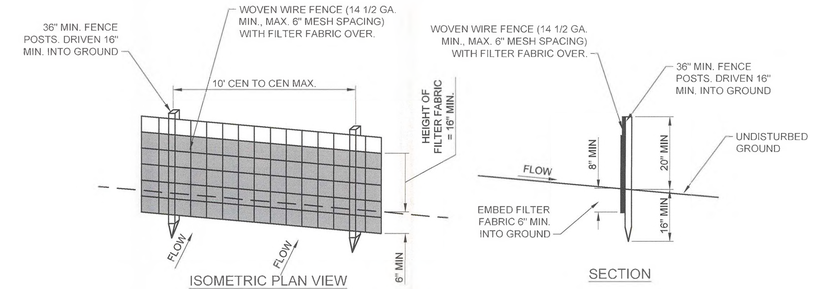
1. LOGS SHALL BE PLACED AS SHOWN ON THE PLANS. IMMEDIATELY STABILIZE ROLLS WITH WOOD STAKES AND COIR TWINE ACCORDING TO THE DETAILS SHOWN ON THE PLANS.
2. **PLACE WOOD STAKES ON BOTH SIDES ANGLED INWARD AS IF TO FORM AN "X" BELOW THE COIR LOG (IF POSSIBLE), ONE FOOT FROM EACH AND ONE MID LENGTH OR AT AN ANGEL TO** ANCHOR INTO FIRMER MARSH SEDIMENT AS SHOWN ABOVE. SECURE AND TIE COIR TWINE TIGHTLY ACROSS EACH ROLL. THE TWINE SHOULD BE WOUND AROUND EACH STAKE AND OVER EACH ROLL SO THAT EACH TIED SECTION HAS A MINIMUM OF 4 STRANDS OF TWINE SECURING THE ROLL DOWN. ONCE THE TWINE IS TIED TIGHTLY, DRIVE STAKES TO THE FINAL DEPTH SO THAT TOP OF THE STAKE IS BELOW TOP OF THE LOGS. FOUR SETS OF STAKES WILL BE INSTALLED PER 10FOOT COIR LOG.
3. ENDS OF ADJACENT LOGS SHALL BE TIED TOGETHER WITH COIR TWINE. AT LEAST 3 PASSES WITH THE TWINE SHALL BE MADE IN THE END NETTING BETWEEN ADJACENT LOGS.
4. THE ENVIRONMENTAL SUPERVISOR MAY REQUIRE ADJUSTMENTS IN THE STAKING AND/OR TYING REQUIREMENTS TO FIT INDIVIDUAL SITE CONDITIONS.



PROPOSED MICRO POOL DETAIL

NTS

NOTE:
1. MICRO POOLS ARE CREATED TO PROVIDE FISH HABITAT FOR BIOLOGICAL MOSQUITO CONTROL.
2. LOCATIONS OF POOLS ARE TO BE WITHIN AREAS OF PHRAGMITES OR EXISTING WATER LOGGED AREAS THAT ARE DEVOID OF NATURAL VEGETATION.

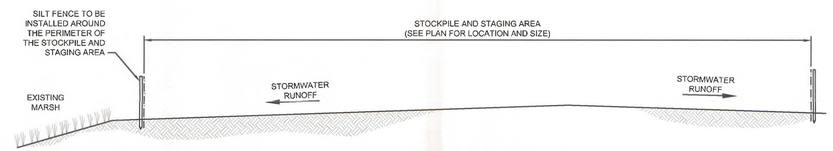


SILT FENCE DETAIL

NOT TO SCALE

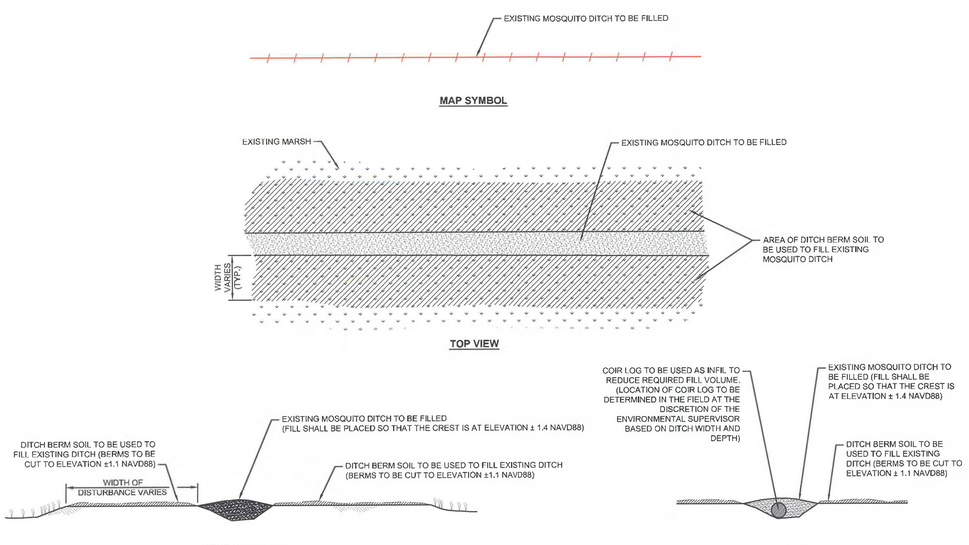
NOTES
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.
5. POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD.
6. FENCE: WOVEN WIRE, 14 1/2 GA. 6" MAX.MESH OPENING.
7. FILTER CLOTH SHALL BE A WOVEN GEOTEXTILE COMPOSED OF POLYPROPYLENE CONFORMING TO AASHTO M288.

STANDARD SYMBOL
——— SF ———



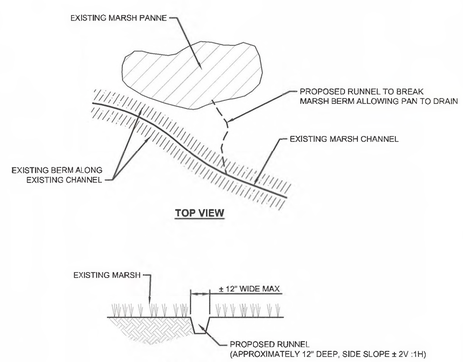
PROPOSED STAGING AND STOCKPILE AREA DETAIL

NTS



PROPOSED DITCH FILL DETAIL

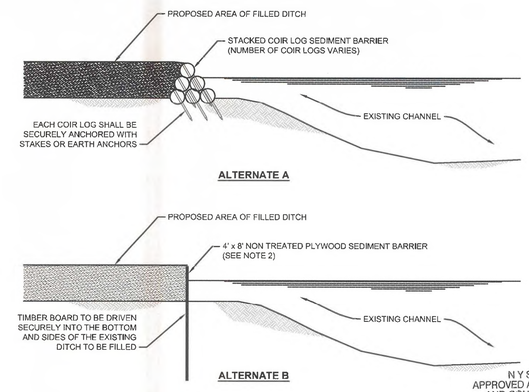
NTS



PROPOSED RUNNEL DETAIL

NTS

NOTES:
1. RUNNELS ARE PROPOSED TO BE CONSTRUCTED BOTH BY HAND AND BY MACHINE.
2. MATERIAL REMOVAL FROM RUNNEL CONSTRUCTION PERFORMED BY MACHINERY IS NEGLIGIBLE AND/OR BROADCAST IN THE AREA OF WORK, THEREFORE IT WILL NOT BE USED AS PROPOSED FILL.
3. MACHINE CONSTRUCTION RUNNEL IS A "V" SHAPED CROSS SECTION THAT MEETS THE DIMENSIONS SHOWN IN THE DETAIL.



NYSDEC
APPROVED AS PER TERMS AND CONDITIONS OF
PERMIT NO. 1-5178-9860-0/00001
DATE 4/6/18

SEDIMENT BARRIER DETAIL

NTS

NOTES:
1) SEDIMENT BARRIER IS TO BE USED TO TERMINATE A DITCH FILLING OPERATION AND PREVENT THE LOSS OF FILL SEDIMENT.
2) SEDIMENT BARRIER TO BE USED IN CHANNEL PLUGGING OPERATIONS. DEPENDING ON SIZE OF CHANNEL TO BE PLUGGED MULTIPLE SHEETS OF PLYWOOD REINFORCED WITH UNTREATED 2x4 LUMBER ARE PROPOSED TO BE UTILIZED.

NO.	DATE:	REVISIONS:	BY:
2.	2-2-18	REVISED AS PER DEC AND FEMA COMMENTS	CCV
1.	9-20-17	REVISED AS PER DEC COMMENTS	CCV

PROPOSED MARSH RESTORATION DETAILS
FOR
WEST SAYVILLE WETLAND

NELSON & POPE
ENGINEERS & SURVEYORS
572 WALT WHITMAN ROAD, MELVILLE, N.Y. 11747
PHONE (631) 427-5665 FAX (631) 427-5620
WWW.NELSONPOPE.COM

P.E. SEAL AND SIGNATURE

PROJECT NO.:	16154
DRAWN BY:	CCV
CHECKED BY:	HE
DATE:	1-23-17
SCALE:	AS SHOWN
FILE NO.:	-
CADD:	16154-DET
DRAWING NO.:	C-501
SHEET NO.:	3 OF 3

IT IS A VIOLATION OF NEW YORK STATE EDUCATION LAW ARTICLE 145, PROFESSIONAL ENGINEERING AND LAND SURVEYING, SECTION 7209 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER OR LAND SURVEYOR, TO ALTER AN ITEM IN ANY WAY. IF AN ITEM BEARING THE SEAL OF AN ENGINEER OR LAND SURVEYOR IS ALTERED, THE ALTERING ENGINEER OR LAND SURVEYOR SHALL AFFIX TO THE ITEM HIS SEAL AND NOTATION "ALTERED BY" FOLLOWED BY HIS SIGNATURE AND THE DATE OF SUCH ALTERATION, AND SPECIFIC DESCRIPTION OF THE ALTERATION.