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Eversource Energy

Seacoast Reliability Project
Water Quality Monitoring Plan
For Turbidity Barrier Removal

Prepared For:
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1.0 Introduction

Eversource's Seacoast Reliability Project (SRP) has buried three cables in the sediments crossing Little Bay north of Adams Point within a corridor previously identified as "Cable Area" on navigation charts. The installation methods, primarily jet plow and hand burial, released some sediment into the water column creating a turbidity plume that moved with the tides and with the progress of installation along the route. Analysis of the sediments along the route indicated that, while various organic and inorganic contaminants are present they are typically at low levels and within the ranges observed elsewhere in Little Bay. All contaminants were below the concentrations likely to cause ecological impairment with the exception of arsenic which averaged slightly above levels shown to have a potential for ecological response. Arsenic is naturally occurring in bedrock in NH, and the levels observed are not uncommon for the state.

As part of the SEC permit conditions, DES required the project to conduct extensive water quality monitoring during jet plowing and the hand jetting phase. The project design also included the use of bottom-sealed turbidity barriers for the hand jetting phase. The turbidity barriers were deployed to surround the entire hand jet area on the west shore and the portion of the east shore on the tidal flats where currents are low enough to allow a barrier. After completion of the hand jetting, DES recommended water quality monitoring during removal of the turbidity barriers to assess the amount of sediments suspended by the removal operations (DES Condition 56).

> 56. Silt Curtains: To the maximum extent practicable, silt curtains shall be used to minimize turbidity during installation of the underground cables in the Little Bay Estuary. As a minimum, silt curtains shall be installed when divers hand-jet the cables on the west side of Little Bay and along approximately 311 feet (of the total 541 feet) of cable that is to be hand jetted on the east side of the estuary. At least ninety {90) days prior to removal of the silt curtains, the Applicant shall consult with and receive NHDES approval of, a plan to remove the silt curtains in a manner that will minimize turbidity associated with resuspension of the sediment deposited within the silt curtains due to hand-jetting. Monitoring to determine the effectiveness of the plan shall comply with the Water Quality Monitoring and Adaptive Management Plan (condition 45).

The turbidity barriers are designed to minimize turbidity associated with resuspension of the sediment deposited within the barriers due to hand-jetting, and to contain the curtain to minimize turbidity when retrieved at the end of the project. Normandeau will be conducting water quality monitoring to determine the effectiveness of the removal effort, as measured against the water quality criteria described in the Revised Final Water Quality Monitoring Plan dated Oct. 15, 2019 (Normandeau 2019).

This document addresses Condition 56 that addresses turbidity barrier removal and monitoring, as well as other relevant water quality monitoring conditions (Appendix B), and specifies the monitoring and adaptive management protocols to be followed during the turbidity barrier removal. Given the current rate of progress for cable installation, Eversource expects to complete the hand jetting by mid-December with removal of the turbidity barriers commencing immediately after.

2.0 Independent Environmental Monitor

NHDES Condition 40 states that: *At least sixty (60) days prior to installing cable in Little Bay, the Applicant shall retain an Independent Environmental Monitor for work in Little Bay at the Applicant's expense. The selection of the Independent Environmental Monitor shall be approved by NH DES. The Independent Environmental Monitor shall be empowered to order corrective actions related to surface*

water quality and to order the temporary cessation of construction activities until corrective action has been implemented.

Eversource has engaged a qualified Independent Environmental Monitor (IEM) who has been approved by NH DES. The IEM is becoming familiar with the planned project activities including the environmental monitoring plans. This has enabled the IEM to gain full understanding of all of the environmental conditions placed on the project, interact with the construction operators and environmental monitoring crew members, and NH DES. The IEM will be on site during the removal of the turbidity barrier, and will continue to coordinate with NH DES and the project team.

The IEM will be involved in review of weather and wind conditions (Conditions 53 and 54) to ensure that appropriate decisions are made for allowing in-water construction to proceed on a given day. The IEM will maintain a daily log of all activities to be submitted to NHDES on a weekly basis unless NHDES determines that another schedule is preferable.

3.0 Mixing Zone (Condition 44)

NHDES Condition 44 states: *"At least sixty (60) days prior to the start of construction in Little Bay, the Applicant shall submit a mixing zone request to the NHDES Watershed Management Bureau for approval that includes a description and map showing the proposed mixing zone in Little Bay, justification for the proposed limits of the mixing zone and documentation demonstrating that the proposed mixing zone complies with the minimum criteria in administrative rules Env-Wq 1707.02.*

The mixing zone shall be established for all jet plow and hand-jetting activities. Prior to submitting the proposed mixing zone request, the Applicant shall determine if there are any new aquaculture operations in Little Bay. Unless otherwise authorized by NH DES, the mixing zone shall not include any portion of an aquaculture site that has aquaculture product (i.e., oysters, etc.) in the water during and up to 24 hours following jet plow and hand-jetting activities."

3.1 Compliance with the Minimum Criteria in Env-Wq 1707.02

SRP will meet the criteria in Env-Wq 1703.03(c)(1) (Env-Wq 1707.02(a).
These criteria will be met because:

- No formation of harmful benthic deposits, foams or other visible substances will occur. Although the model predicts that there will be some redeposition of disturbed sediments beyond the footprint of the jet plow this is will not be harmful to the Little Bay ecosystem because
    - *i.* The sediments do not contain contaminants in higher concentrations than in other places in Little Bay
    - *ii.* The sediment grain size in the jet plow footprint is comparable to nearby substrates and will therefore be suitable for recolonization by benthic infauna
- No flotation of foam or other visible substances will occur.
- No odors, color or turbidity that would render the water unsuitable for designated uses will occur after project completion. Turbidity will be present temporarily in the mixing zone during construction as allowed by Env-Wq 1700.
- No nuisance species intrusion or interference with recreational activities will occur except as allowed by the SEC during construction when recreation will be prohibited for public safety in a small area of Little Bay during removal of the turbidity barrier.

SRP will not interfere with biological communities or populations of indigenous species (Env-Wq 1707.02 (b)):

- The disturbed sediments do not contain concentrations of contaminants that have the potential to elicit lethal or sublethal effects in exposed organisms for within the short duration of potential exposure.
- Redeposited sediments will be available and suitable for recolonization by a similar benthic infaunal community to that observed locally. The benthic monitoring plan will demonstrate the Project's compliance with this requirement.
- The highly ephemeral and localized nature of the sediment plume means that the majority of the width of Little Bay will be unaffected by the plume at any given time and therefore be available for passage across the cable route by mobile organisms.
- During removal, the highest concentrations of excess TSS will be restricted to the area immediately around the turbidity barrier and will dissipate rapidly so that the exposure of organisms to elevated suspended sediments will be unlikely to reach a duration that would elicit sublethal or lethal effects (Wilbur and Clarke (2001).

SRP will not result in the accumulation of pollutants in the sediments or biota (Env-Wq 1707.02 (c));

- The project will not introduce contaminants into Little Bay. Although sediments will be redistributed to the immediately adjacent substrate, sediment contaminant loads in the vicinity of the turbidity barriers are similar to other places in upper Little Bay (Normandeau 2017a).
- The shellfish tissue monitoring plan will demonstrate the Project's compliance with this requirement.

SRP will provide zone of passage for swimming and drifting organisms (Env-Wq 1707.02 (d));

- At no point during removal of the turbidity barriers will the removal operation or any associated sediment plume extend across more than a small portion of the bay's width. Mobile organisms will be able to avoid areas where TSS levels are highest by either moving laterally or vertically above these areas (Normandeau 2016).

SRP will not interfere with existing and designated uses of the surface water (Env-Wq 1707.02 (e));

- Effects of SRP on Little Bay water quality will be restricted to construction with the primary effects occurring during the jet plow installations. No discernable interference will occur as a result of the removal of the turbidity barriers.

SRP will not impinge upon spawning grounds or nursery areas, or both, of any indigenous aquatic species (Env-Wq 1707.02 (f));

- There are no identified anadromous fish spawning or nursery grounds in the immediate project area. While winter flounder could spawn in the project area, construction will take place well after the winter-spring spawning period for this species. Oysters typically spawn in the summer in the Great Bay system and most planktonic larvae will have metamorphosed and settled to the substrate by mid-September, well before the mid-December removal of the turbidity barriers (Normandeau 2016 and Normandeau 2017b).

SRP will not result in the mortality of any plants, animals, humans, or aquatic life within the mixing zone (Env-Wq 1707.02 (g));

- A very small percentage of the planktonic organisms occurring in Little Bay will be captured during the removal of the turbidity barrier and will be killed. Given the miniscule volume of water entrained when the barrier is reefed, it is highly unlikely this mortality will be discernable from natural mortality.

The chronic toxicity value of 1.0 TUc is not a concern at the mixing zone boundary for the project (Env-Wq 1707.02 (h));

- The disturbed sediments do not contain concentrations of contaminants that have the potential to elicit lethal or sublethal effects in exposed organisms for the short duration of potential exposure. This standard is intended primarily for continuous discharges of toxics from wastewater treatment plants to receiving waters that could cause chronic exposure to toxins for aquatic organisms. For SRP, turbidity caused by disturbance of bottom sediments for short durations by jet plow operations is the only concern at the mixing zone boundary. Chronic toxicity is not a concern for these sediments and for short term jet plow operations.
- The water quality monitoring will demonstrate compliance with this requirement.

3.2 Proposed Mixing Zone for Removal of Turbidity Barrier

As described in the water quality monitoring plan (Normandeau 2019), turbidity measurements of 10 NTUs were determined to convert to TSS concentrations of approximately 20 mg/L in Little Bay. Therefore the turbidity compliance standard in Env-Wq 1703.11(b)[1] of 10 NTUs above background at the proposed turbidity mixing zone compliance boundary converts to approximately 20 mg/L of TSS above background.

The extent of any plume created during removal of the turbidity barrier is expected to be less than that predicted for the hand jetting (Figure 1). As was observed during jet plowing and hand jetting, the plume is expected to be localized and ephemeral during the removal of the barrier. The volume of sediments suspended during removal operations is also expected to be less, given that no jetting process which actively suspends sediments, will be used.

For the turbidity barrier removal, the requested compliance boundary for water quality criteria for the protection of aquatic life for turbidity, dissolved oxygen, dissolved arsenic (acute and chronic levels), dissolved copper (acute and chronic levels), and ammonia (acute and chronic levels) is located 500 feet to the north and south of the proposed cable centerline shown in Figure 1).

3.3 No Aquaculture Product within the Mixing Zone during the Project

The SEC has required that the mixing zone *"not include any portion of an aquaculture site that has aquaculture product (i.e., oysters, etc.) in the water during and up to 24 hours following jet plow and hand-jetting activities."* As shown in Figure 2, no aquaculture leases occur within the vicinity of the hand-jet mixing zones.

[1] Env-Wq 1703.11 (d) For purposes of state enforcement actions, if a discharge causes or contributes to an increase in turbidity of 10 NTUs or more above the turbidity of the receiving water upstream of the discharge or otherwise outside of the visible discharge, a violation of the turbidity standard shall be deemed to have occurred.

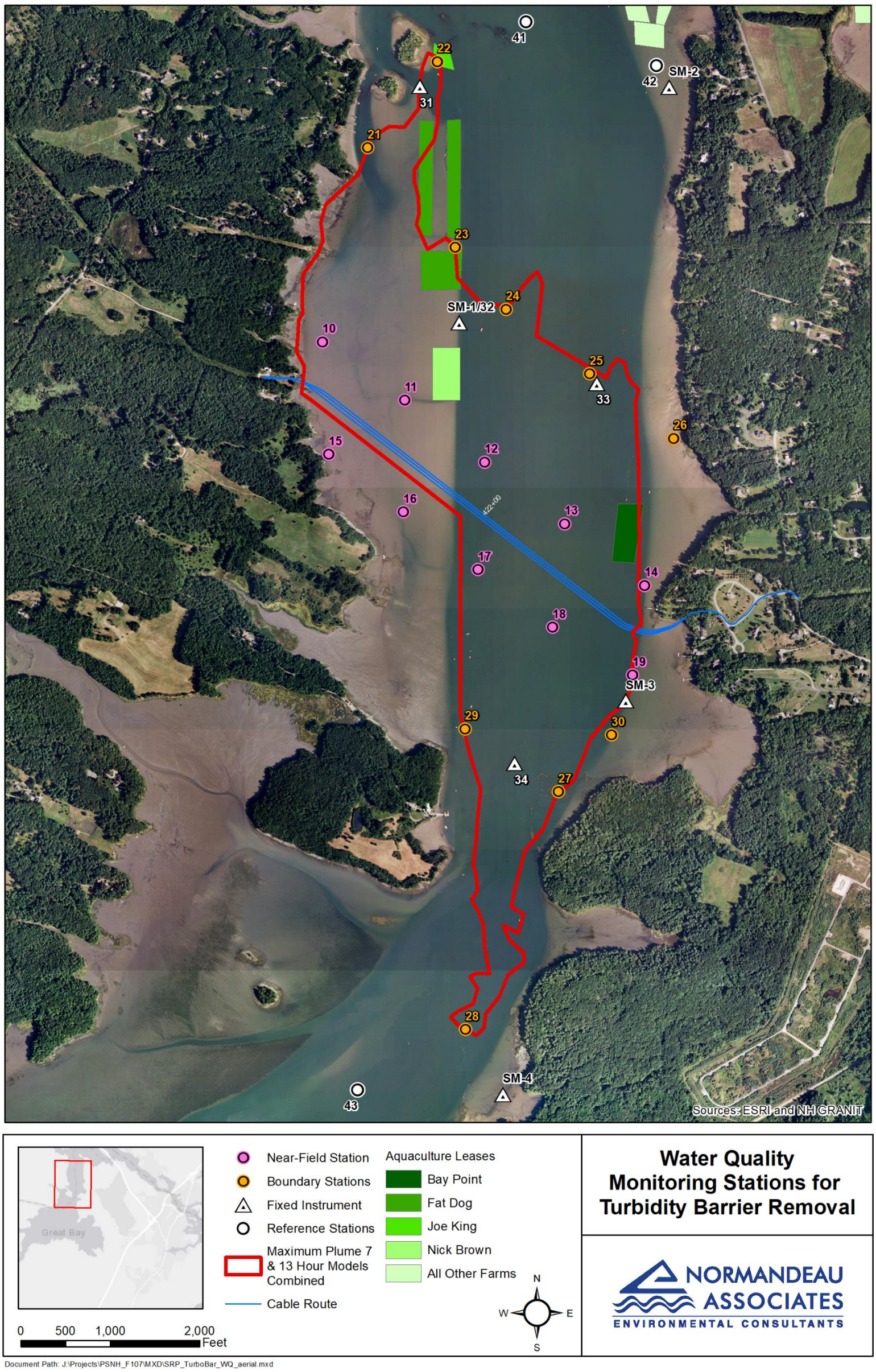

Figure 1. SRP water quality monitoring stations.

4.0 Water Quality Monitoring Design

4.1 Turbidity Barrier Removal

Hand jetting will be required in nearshore waters on both sides of the bay where the jet plow cannot navigate (Figure 2). The entire portion of the route where hand jetting will be necessary on the western side of the bay will be enclosed within a turbidity barrier that is expected to contain an estimated 90% of the suspended sediments. Similarly, the shallowest portion of the area to be hand jetted on the eastern side of the bay will also be enclosed within a turbidity barrier. Immediately after completion of hand jetting, the turbidity barriers must be removed to allow the concrete mattresses to be placed in the near-shore areas. A generalized removal plan is provided in Appendix A. This plan has been refined as follows:

- Allow a minimum of 2 tide cycles between completion of hand jetting and initiating turbidity barrier removal. The purpose of the delay is to allow sediments suspended and deposited within the turbidity barrier to begin to reconsolidate before being exposed to open water. Note that because the divers worked their ways from the deeper to the shallower end of the enclosure, sediments disturbed in the deeper areas, early in the hand jetting, have had some time to partially consolidate.
- Reef the barrier to be removed to allow limited exposure to tidal currents and waves. Reefing entails gradually pulling the barrier up towards the floats. Depending on depth of curtain, this could take 2 to 4 passes around the barrier.
- During the high half of the tide (2-3 hours before and after high slack), pull anchors and tow barrier to barge. Use small boats to control the barrier. Winch the furled barrier onto a barge for on-shore disposal. Disposal will be at an off-site construction and demolition site.
- Reefing, anchor pulling and removal of the barrier may or may not occur on the same day depending on tide and weather conditions and it cannot be predicted at this point.

The western turbidity barrier will be removed first, as hand jetting will be completed on that side before the eastern shore is complete. The installers expect the eastern shore to be completed approximately 5 days after than the western shore, at which time removal of the turbidity barrier will begin.

The equipment required include several small motorized boats and a barge with a winch to assist in getting the barrier to shore for removal.

4.2 Relevant NH Water Quality Criteria

The turbidity barrier removal process will adhere to the same compliance with NHDES water quality criteria for:

- Turbidity (<10 NTUs above ambient background conditions)
- Dissolved oxygen (> 5mg/L)
- Dissolved arsenic (acute 1-hr exposure < 69 µg/L; chronic 4-day exposure < 36 µg/L)
- Dissolved copper (acute 1-hr exposure < 4.8 µg/L; chronic 4-day exposure < 3.1 µg/L)
- Ammonia (criteria are included in Env-Wq 1703.28 through Env-Wq 1703.32 and are temperature, pH and salinity dependent; acute is based on 1-hr average and chronic is based on 4-day average)
- Fecal coliform New Hampshire's fecal coliform standards for tidal waters used for growing or taking of shellfish for human consumption are based on the National Shellfish Program guidance (USFDA 2017). The SRP activities do not fall neatly into any of the sampling schemes addressed

in the guidance document. This states that the fecal coliform median or geometric mean most probably number (MPN) shall not exceed fourteen (14) per 100 ml and not more than 10 percent of the samples shall exceed an MPN of 43 MPN per 100 for a five-tube decimal dilution test; 49 MPN per 100 ml for a three-tube decimal dilution test; or 28 MPN per 100 ml for a twelve-tube decimal dilution test.

4.3 Water Quality Sample Stations

For water quality monitoring purposes, we are considering the turbidity barrier removal to be similar to the unconfined hand jetting, and that it will produce a plume that dissipates to ambient levels in a short distance. For this monitoring, nearfield stations become the edge of the mixing zone and the boundary stations become the reference sites, in addition to the fixed stations. Coordinates for the proposed monitoring stations are provided in Table 1 and their locations are shown on Figures 1 and 2. Additional stations will be added in the vicinity of the boundary stations (10, 14, 15 and 19) if visual and meter observations indicate that suspended sediments are not being adequately characterized by the boundary stations. Not all stations will be sampled on each event. The working and reference stations will be selected daily depending location of the activity, tides and observations of the plume. Turbidity profiles will be performed periodically if a sediment plume is observed. All sampling protocols will follow those developed for the Revised Final Water Quality Monitoring Plan (October 15, 2019).

Table 1. Coordinates for SRP Water Quality Monitoring Stations to be monitored during the turbidity barrier removal. Not all stations will be monitored during each event.

Station	Habitat	Latitude	Longitude
10	Tidal flat	43.10662	-70.8692
14	Tidal flat	43.09905	-70.8558
15	Tidal flat	43.10317	-70.869
19	Tidal flat	43.09631	-70.8563
Reference Stations*			
21	Tidal flat	43.11257	-70.8672
25	Channel	43.10557	-70.858
26	Tidal flat	43.10356	-70.8545
27	Channel	43.09275	-70.8595
29	Channel	43.0947	-70.8634
30	Tidal flat	43.09448	-70.8572
42	Tidal flat	43.11501	-70.8551
Fixed Instrument Stations			
31	Channel	43.11446	-70.8650
32	Tidal flat	43.10949	-70.8636
33	Channel	43.10529	-70.8577
34	Channel	43.09365	-70.8613

4.4 Development of Reference Database

Real-time turbidity readings will be compared to the reference database developed during the jet plow trial, jet plow installation and hand jetting to determine whether removal of the turbidity barriers complies with water quality standards at the mixing zone boundary (500 ft from the cable centerline or the offshore end of the barrier). The reference database will be updated with results from:

- Sampling at all active monitoring stations conducted prior to the start of in-water work for the turbidity barrier removal.
- Sampling from upstream monitoring stations conducted during the first ebb tide during the turbidity barrier removal.

This database will be updated routinely each day.

The database has been maintained as an excel file that is sortable by date, depth, tidal stage, and station. These data have been used to calculate a tidal flat Boundary Station Action Levels (BSAL) using data collected only from tidal flat stations (Figure 2 and Table 1). The BSAL will be based on the reference data combining all collection depths. For the tidal flats, the 90th percentile (i.e., the value that 10% of the reference data points exceeds) based on all reference tidal flat data and the 90th percentile based on just the reference tidal flat data collected on the day of cable installation have been calculated. The tidal flat BSAL will be then equal to the greater of the following:

- 90th percentile based on all reference tidal flat data + 10 NTU, or
- 90th percentile based on reference tidal flat data collected on the day of cable installation + 10 NTU

A copy of the reference database will be provided to the IEM at the start of each day electronically. Any revisions to the database will also be submitted to the IEM.

4.5 Water Quality Monitoring

During the reefing and removal processes, Normandeau will monitor for water quality compliance as summarized in Table 2. Mobile monitoring at the boundary and reference stations will be initiated approximately one hour prior to the startup of the reefing process and continue through the removal process and for a minimum of two hours the removal is complete or until turbidity results are at or near background. Data collected prior to reefing is considered to be reference data regardless of the location of the station. If the removal process extends into two or more days, daily water quality monitoring will be conducted, starting one hour before any work activity and continuing for a minimum of two hours after removal is complete or until turbidity levels at the boundary stations are at or near background.

Water quality monitoring will be conducted using YSI ProDSS and In Situ Aquatroll 600 multiparameter sondes with a turbidity resolution of 0.1 NTU and accuracy of +/- 2% (minimum 0.3 NTU accuracy). QA/QC procedures will follow manufacturer guidelines as well as the USGS publication “Guidelines and Standard Procedures for Continuous Water Quality Monitors: Station Operation, Record Computation, and Data Reporting” (USGS, 2006).

Implementation of the field program will require one sampling crew on shallow draft boats, equipped with the appropriate electronic probes, pumps for water collection, sample containers and data sheets. All personnel involved in any aspect of the field program will participate in project-wide environmental and safety training at which the purpose of the field program and communication protocols will be fully explained as well as review the contents of this monitoring plan and the SOP.

Monitoring crews will follow the basic protocols established for monitoring hand jetting operations.

Monitoring at all stations will include turbidity, DO, salinity, temperature measurements and water samples for nitrogen species, TSS, dissolved and total Cu and As well as fecal coliforms. Sampling will be conducted hourly at all stations initially. If no plume is observed, we will reduce water collection frequency to every other hour but continue to monitor turbidity and other parameters with the hand-held meters on an hourly basis.

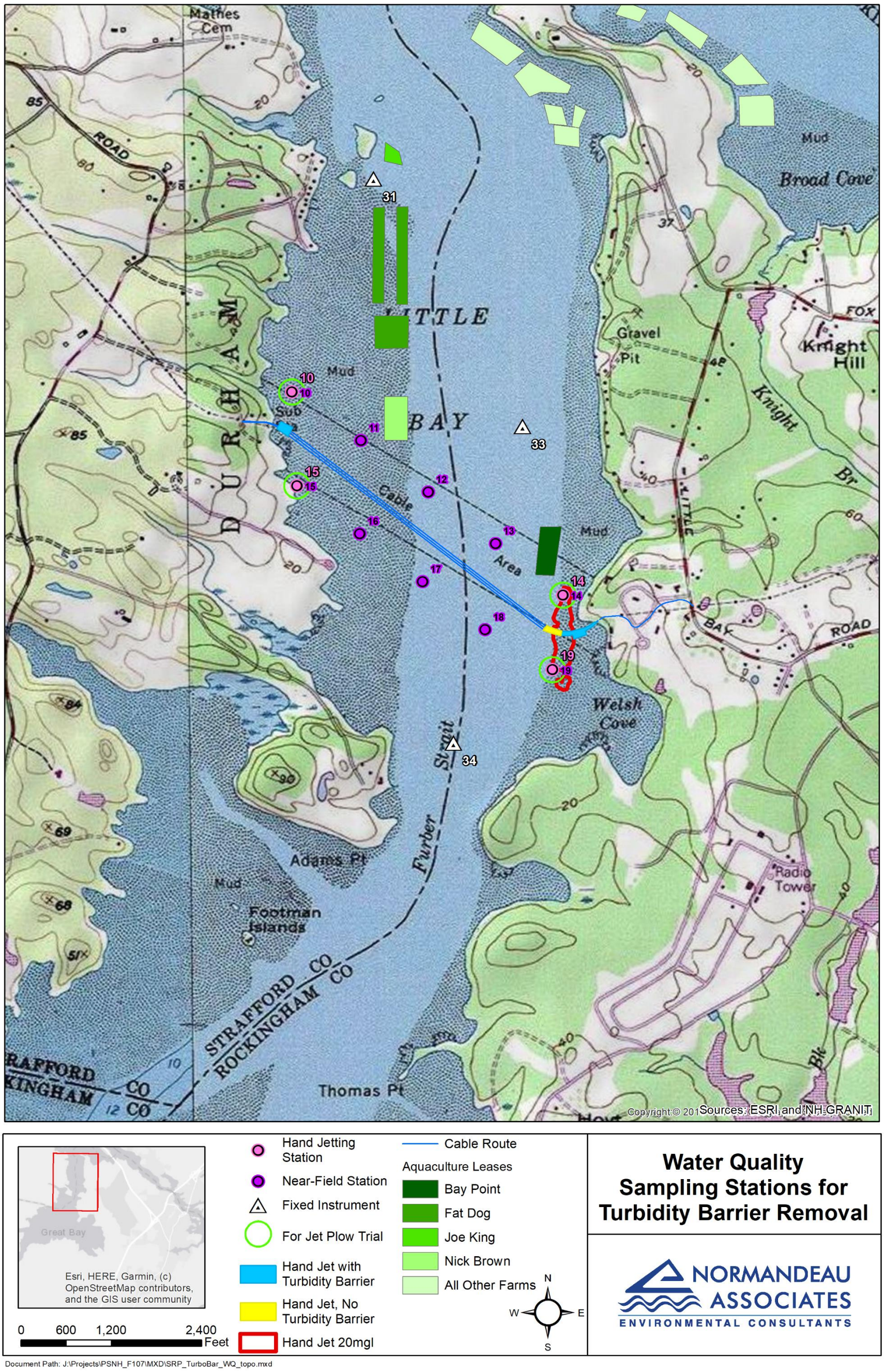

Figure 2. SRP water quality monitoring stations during turbidity barrier removal.

Table 2. Description of Water Quality Monitoring for Turbidity Barrier Removal

Type	Purpose	Location	Monitoring Protocols			
			Stations	Frequency	Depths[a]	Parameters
Boundary/ Near-field	Compliance with mixing zone	500 ft from activity = edge of mixing zone	West – 10, 15 East - 14, 19	Hourly starting before barrier is disturbed; continue for 2 hrs after work is complete for day or until boundary stations turbidity levels are similar to background	Near surface (-1 ft) Near bottom (1 ft above)	***In situ* measurements:** Turbidity DO Salinity Temperature pH
						Water samples: (nitrogen species, TSS, Cu, As) Fecal coliforms (near-surface only)
Fixed	Continuous turbidity monitoring	Edge of mixing zone; near shellfish reference station	32, northern shellfish reference station	Continuous (15 minute intervals) from 1 week before to 1 week after installation complete	Near-bottom	***In situ* measurements:** Turbidity DO Salinity Temperature pH
Reference	Ambient condition	Beyond extent of plume	West – 21 East -- 25, 30	Hourly starting before barrier is disturbed; continue for 2 hrs after work is complete for day or until boundary stations turbidity levels are similar to background.	Near surface (-1 ft) Near bottom (1 ft above)	***In situ* measurements:** Turbidity DO Salinity Temperature pH
						Water samples: (nitrogen species, TSS, Cu, As) Fecal coliforms (near-surface only)

[a] When water depths are less than 3 feet, a single near-bottom sample will be collected. No samples will be collected when water depths are less than 2 feet to avoid disturbing bottom sediments with the motor propeller.

4.6 Drone Tracking of Turbidity

A drone will be used to track the visual extent of the plume during each reefing and barrier removal operation. The drone proposed for this work is a DJI Phantom 4 Pro, approximately 3.2 pounds, with a range of over 1.3 miles (with visibility) and a flight time of 25 minutes. It is capable of flying in wind speeds of up to 15-20 mph, but cannot fly in precipitation. It is GPS-enabled with a hover accuracy of 1.5 m, carries both video and still cameras, and has a still image resolution of about 20M pixels. The images can be viewed in real time from shore to direct the drone's position, and are stored with GPS coordinates and a time stamp.

The drone operator will be an FAA Certified Part 107 Remote Pilot in Command. Due to proximity to Pease Air Force base, drone flights are restricted to an altitude of 200 feet. At 200 feet altitude, image width is 300 feet.

Drone flights will occur hourly, during daylight hours, inspecting the turbidity barrier removal effort, and tracking the length and width of the visible plume to document its dimensions. If a plume is detected, the pilot will coordinate with the Normandeau monitoring crew to pinpoint its location for conducting a plume profile. The image data will be downloaded and representative images will be provided with the interim and final monitoring reports.

5.0 Field Decisions

5.1 Communication during Operations

Coordination among sampling teams and the IEM are critical to ensure that appropriate decisions necessary to protect water quality in Little Bay can be made in a timely manner. Similar to the monitoring protocol used for jet plowing and hand jetting, the field team performing the water quality monitoring will communicate with the IEM (located on the shore nearest the activity) via the onshore field coordinator. Field crews will report turbidity readings to the onshore field coordinator periodically through the day. If a boundary station turbidity measurement exceeds the BSAL, the onshore field coordinator will immediately notify the IEM and will confirm with each field crew what the next course of action will be (see Sections 5.2 and 5.3).

5.2 Determination of Compliance with Turbidity Criterion

Should an exceedance of the Boundary Station Action Level (BSAL) occur, the onshore field coordinator will inform the IEM to coordinate an immediate response.

Turbidity monitoring data will be evaluated as follows:

- The OFC will determine the BSAL at the beginning of each monitoring day and update it during the day as appropriate. The OFC will provide the IEM with the BSAL.
- The OFC will provide the IEM with hourly updates on turbidity readings from each boat.

- If the average of the turbidity measurements taken at different depths at a boundary station exceeds the BSAL during or after any turbidity barrier removal activities, then the following actions will occur:
    - the onshore field coordinator will notify the IEM. The onshore field coordinator will

instruct the boat crew at the affected station to resample every 30 minutes to determine if the exceedance persists and the boat crew responsible for sampling the appropriate reference stations to sample the reference stations within 30 minutes to determine if background turbidity has increased warranting recalculation of the BSAL.

- If after approximately 30 minutes, the BSAL is still exceeded, the onshore field coordinator will notify and provide sampling results to the IEM who will determine whether sediment suspension reduction methods should be implemented or whether additional sampling is warranted. Sediment suspension reduction measures include:
  - Slowing the removal process (reefing, anchor removal or turbidity barrier); or
  - requiring the removal process to stop for a period of time until the boundary station where the exceedance occurred is in compliance with the BSAL.

Results of monitoring the removal of the first turbidity barrier will be used to inform the procedures for removal of the second barrier.

The IEM will rely on monitoring data, including drone imagery, collected up to that point to help determine the most appropriate action.

6.0 Laboratory Analysis

Laboratory analyses will be conducted by Enthalpy Analytical, Hampton, NH. If needed to meet fecal coliform hold times, samples will be picked up both mid-way through and at the end of the monitoring event. Analytical methods are presented on Table 3.

Table 3. Analytical methods for water quality samples for monitoring removal of turbidity barriers.

Analyte	RL	MDL	Units	Method
Total Nitrogen	NA	NA	mg/L as N	Calculation
TKN	0.5	0.3	mg/L as N	SM4500-NC
NO_3	0.05	0.005	mg/L as N	SM4500-NO3 F
NO_2	0.05	0.005	mg/L as N	SM4500-NO3 F
NH_3	0.1	0.06	mg/L as N	SM-4500NH3
TSS	1	0.6	mg/L	SM2540D
Copper, dissolved	0.5	0.03	µg/L	EPA 200.8
Copper, total	0.5	0.09	µg/L	EPA 200.8
Arsenic, dissolved	0.5	0.02	µg/L	EPA 200.8
Arsenic, total	0.5	0.13	µg/L	EPA 200.8
Fecal coliforms	1	1	MPN/100mL	Colilert-18

7.0 Data Reporting and Actions

Daily summaries of turbidity results and operations will be provided to NH DES and the IEM. Analyses for this data submittal will be limited to whether turbidity exceedances were observed at the boundary stations. If it is determined that the impact station results are outside the range of natural variability, then the marine contractor may be required to modify their turbidity barrier removal methods or schedule. The most likely factors that could be changed are the rate of reefing and techniques for moving the barrier. This decision will be made jointly by NHDES and Eversource.

Final quality controlled monitoring data will be formatted as requested by NHDES for submission to the NHDES Environmental Monitoring Database within one month of completion of the construction monitoring. This schedule may be modified depending on the responsiveness of Enthalpy, who currently has a significant backlog of samples from the hand jetting effort.

The final results and analysis of the turbidity barrier removal monitoring will be included in the final report for water quality monitoring to be provided to NHDES after project completion and final laboratory results have been received, expected early 2020.

8.0 Literature Cited

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Appendices

Appendix A. Barrier Removal Plan, Bottom-Sealing Filter Barrier

Barrier Removal Plan
Bottom-Sealing Filter Barrier

Seacoast Reliability Project: Crossing of Little Bay -- Sediment Containment

September 10, 2019

Separate Bottom-Sealing Filter Barrier Systems are planned to be used at the Newington and Durham ends of the cable placement. While the purpose of the system is to minimize release of sediments during burial of the cables by divers, management of the barrier system itself has the potential to disturb sediments during removal of the barrier. **The key element for removal operations is to avoid the release of a substantial turbidity plume.** The final removal will be for disposal unless the barrier is planned to be cleaned and stored for possible re-use or components removed for re-use. Removal will commence no less than 3 days after completion of dive activities to allow time for preliminary settlement and consolidation of sediment disturbed by the jetting operations.

Bottom-Sealing Filter Barrier Removal

For retrieval the barrier will be "furled" or "reefed" which is to bring the bottom sealing skirt up to the flotation hood. This is accomplished with the use of the integral reefing lines incorporated into the barrier. The reefing lines attach to the bottom of the sealing skirt so that when raised the sealing skirt encapsulates the filter fabric. Once the barrier has been reefed, lower anchor lines are disconnected, then the upper lines. At this point the barrier can be towed to a location from which it is then pulled to the shore and prepared for disposal or, in a situation where a follow-up use has been identified, put onto pallets and covered for shipping and storage for later use or salvage.

A general removal process is described below but is subject to field removal adjustments if they better meet the objective of controlling turbidity release. Primarily the procedure is intended to avoid the sudden release of any substantial amount of sediment that may be settled against the geotextile curtain or is found to be easily released from the sediment surface as it is gradually exposed to tidal currents.

While the following steps outline a general recommended process, the actual removal procedure may be adjusted based on time of tides, site conditions, weather, and available equipment. Especially at the western side, which is mostly exposed at low tide, as possible, the actual lifting of the barrier from the bottom should begin on a rising tide when there is adequate water present for boat operation, and continue sequentially through high water and until either a break point is reached or water is getting too low for effective boat operations without excessive sediment disturbance. Note, that for much of the reefing process, the motor will not be in use as the boat is moved by hand along the barrier flotation. All operations can be field-modified as long as the objective of controlled turbidity release is being met.

1. A. <u>West side</u> (Durham) -- Start the reefing process on the northern side, seaward end of the barrier 2 – 4 hours before the end of the outgoing tide or as soon as boat operations can be conducted

without significant sediment disturbance from the motor. As the tide progresses toward high, continue reefing toward the shoreline in small increments, leaving the barrier in minimal contact with the surface. From slack tide and on into early stages of ebbing, the emersed sections can be reefed above the bottom and the reefing process continue along the south side of the barrier toward back toward the deeper water. Repeat the reefing process along the southern side moving seaward so that the last part of the barrier to be lifted is the most seaward end.

B. East side (Newington) –As with the west side system, the objective is to reef incrementally while observing any sediment release or potential for significant sediment release from barrier removal and accommodating by degree and timing of reef/lift. Last section lifted from the bottom is the seaward end so that releases are held for gradual release especially if the reefing cannot be completed in one day.

2. Reef the remaining barrier. Starting where previous reefing effort left off (does not matter which side), complete the reefing process. If the operation cannot be effectively completed in one tidal cycle, leave the outermost end in contact with the sediment unless it has already been lifted from the bottom. If it requires a second day to complete, leave the barrier in place as it will rest on the sediment during low tide and lift only gradually during the second diurnal high tide.

3. Disconnect lower anchor lines from the anchor, coil and stow on the barrier with cable ties. The anchor lines shall remain connected to the barrier at the lower d-rings.

4. Disconnect every other upper anchor line and stow in the same fashion as the lower ensuring the lines may be accessed from the water's surface.

5. Once the barrier has been reefed it may be pulled ashore. Pulling the barrier ashore will require an adequate pull source which may be a long reach excavator, an 8,000 lb AT forklift or similar. If the system is to be reused, laydown material should be used over any rough / rocky grounds.

The time required to reef the system will depend primarily on the level of difficulty working on the mud flats, timing of tides and other factors as noted above. It is likely to take at least 3 – 5 hours to fully reef the system and potentially a second day on each of the systems to complete reefing or to remove, tow and remove to the shore. Factors impacting the timing are cited above.

Equipment

The reefing process will be completed with a crew of two or three and a small vessel with a J davit or similar that is also cable of towing the 800 and 1100 ft floating reefed barriers to the staging/demob area.

Appendix B. NHDES Permit Conditions in the SEC Approval Pertaining to Water Quality Monitoring

Condition 40. Independent Environmental Monitor

At least sixty (60) days prior to installing cable in Little Bay, the Applicant shall retain an Independent Environmental Monitor for work in Little Bay at the Applicant's expense. The selection of the Independent Environmental Monitor shall be approved by NH DES. The Independent Environmental Monitor shall be empowered to order corrective actions related to surface water quality and to order the temporary cessation of construction activities until corrective action has been implemented.

Condition 44. Mixing Zone Plan

At least sixty {60) days prior to the start of construction in Little Bay, the Applicant shall submit a mixing zone request to the NHDES Watershed Management Bureau for approval that includes a description and map showing the proposed mixing zone in Little Bay, justification for the proposed limits of the mixing zone and documentation demonstrating that the proposed mixing zone complies with the minimum criteria in administrative rules Env-Wq 1707.02.

The mixing zone shall be established for all jet plow and hand-jetting activities. Prior to submitting the proposed mixing zone request, the Applicant shall determine if there are any new aquaculture operations in Little Bay. Unless otherwise authorized by NH DES, the mixing zone shall not include any portion of an aquaculture site that has aquaculture product (i.e., oysters, etc.) in the water during and up to 24 hours following jet plow and hand-jetting activities.

Condition 45. Water Quality Monitoring and Adaptive Management Plan

At least ninety (90) days prior to inwater work in Little Bay, the Applicant shall submit to the NH DES Watershed Management Bureau for approval, a Water Quality Monitoring and Adaptive Management Plan for work in Little Bay.

The Applicant shall then implement the approved plan.

In general, the plan shall include, but not be limited to, the following for jet plow and hand-jetting activities:

- parameters that will be monitored;
    - monitoring locations (including latitude, longitude and a plan showing the locations);
    - how and when sampling will be conducted;
    - the number of sampling teams;
    - when and how training will be conducted;
    - the lab methods and field equipment that will be used (including meter accuracy);
    - quality assurance/quality control provisions;
    - how monitors will communicate real-time monitoring information to jet plow operators;
    - the use of drones (especially in the shallower areas) to assist with real-time tracking of sediment plumes;
    - how decisions will be made and communicated to modify jet plow operation based on real-time monitoring results to minimize sediment resuspension due to jet plow operation;
    - how and when results will be reported;
    - when data will be input electronically in the NHDES Environmental Monitoring

Database.

- Parameters shall include, but not be limited to, the following:
  - Field measurements:
    - Turbidity (reported as NTU), dissolved oxygen and salinity.
    - Samples for Laboratory Analysis:
    - Total nitrogen, nitrate/nitrite nitrogen, total Kjeldahl nitrogen (TKN) and, ammonia nitrogen;
    - TSS;
    - Dissolved copper and arsenic (filtered in the field using a 0.45-micron filter prior to collection);
    - Total copper and arsenic (unfiltered);
    - Fecal coliform; and
    - Other parameters (if directed by NHDES).

The plan shall include criteria, based on real-time turbidity measurements, that will be used in the field to determine when jet plow operations must stop or otherwise be modified to minimize sediment resuspension, as well as when operations can resume. The plan shall also include all methods that can be used to minimize sediment resuspension due to jet plow operation (including but not limited to changing the jet speed and pressure) and how long work can be temporarily suspended.

Sample collection shall include samples taken at multiple depths and times as well as at multiple locations, including, but not limited to, stations at the mixing zone boundary and stations within the mixing zone. Results for parameters specified by NH DES from samples collected for an individual cable installation shall be received and distributed to NH DES and the Independent Environmental

Monitor prior to subsequent cable installations. The Applicant shall not conduct subsequent cable installations unless authorized by NH DES. NH DES may require modifications to the plan based on water quality results.

Condition 50. Training

Not more than thirty (30) days prior to the scheduled start of construction in Little Bay, the Applicant shall conduct a training program for construction staff, contractors, sub-contractors environmental inspectors, the independent environmental monitor, and NHDES staff. The training program shall include, but not limited to, a review of the cable installation methods, spill prevention and cleanup responses, allowable environmental conditions and measures (i.e, contingency plans) that will be implemented in the event that environmental conditions are exceeded.

Condition 53. Weather

At least seven (7) days prior to the start of cable installation across Little Bay, the Applicant shall check the weather forecast for the area, shall maintain a written weather log, and shall not proceed with jet plowing for cable installation if the forecast predicts a storm event or excessive wind, which, in combination with tidal influences shall exacerbate the sediment turbidity plume beyond that predicted in the turbidity plume modeling presented in the application.

Condition 54. Wind

Beginning at least twelve (12) hours prior to planned cable installation activities, the independent environmental monitor shall monitor the latest National Weather Service weather forecast for Great Bay/ Adams Point. If sustained wind speeds in excess of fifteen (15) mph are forecast, the environmental monitor shall, based upon predicted and observed conditions within Little Bay, and in conjunction with NH DES, decide if cable installation should be allowed to commence.

Condition 58. Timing of Hand-Jetting and Jet Plowing

Unless otherwise authorized by NH DES, and to limit the combined impacts of construction activities on Little Bay water quality, hand-jetting shall not be conducted for the period beginning six hours before and ending six hours after jet plow cable installation or within six hours of turbidity criterion exceedances at the mixing zone boundary in the vicinity of the hand-jetting operation(s).

Condition 59. Minimum Time Between Cable Installations

Unless otherwise authorized by NHDES, after a cable is buried by jet plowing, installation of the next cable by jet plowing shall not commence for at least five (5) days.

Condition 60. Screen on Jet Plow Intake

The end of the jet plow intake pipe shall be equipped with a screen with openings no greater than 2 inches in diameter.

Condition 60b. Jet Plow Trial Run

If the SEC determines that jet plowing should be allowed for submarine cable installation in Little Bay (instead of other alternatives such as horizontal directional drilling), and that a jet plow trial run (without cable) should be conducted prior to installation of the submarine cable (as recommended by NH DES in a letter dated February 28, 2018 to the SEC if jet plowing is the selected alternative), the Applicant shall, unless otherwise authorized by NH DES, comply with the following:

- At least 90 days prior to the trial, the Applicant shall submit a Jet Plow Trial Plan (JPTP) to NHDES for approval and then implement the approved plan. The JPTP shall describe in detail how and when the trial and monitoring will be conducted and results reported.
- At least 14 days prior to the scheduled start of submarine cable installation in Little Bay the Applicant shall submit a jet plow trial run summary report to the SEC and NH DES that addresses the following:
    - how well the model predicts the sediment plume ;
    - how well the water quality monitoring plan works (including communication between the monitors and jet plow operators) and what if, any, modifications to the plan are necessary;
    - water quality monitoring results within the mixing zone and at the boundary;
    - how measures taken to reduce sediment suspension due to jet plowing (including, but not limited to jet plow speed and pressure reductions) impact water quality;
    - if results suggest that cable installation by jet plowing is likely to meet NH surface water quality standards; and
    - if any additional sediment suspension reduction measures are needed to help ensure surface water quality standards will be met.

Installation of submarine cable in Little Bay shall not proceed until authorized by NH DES and the SEC.